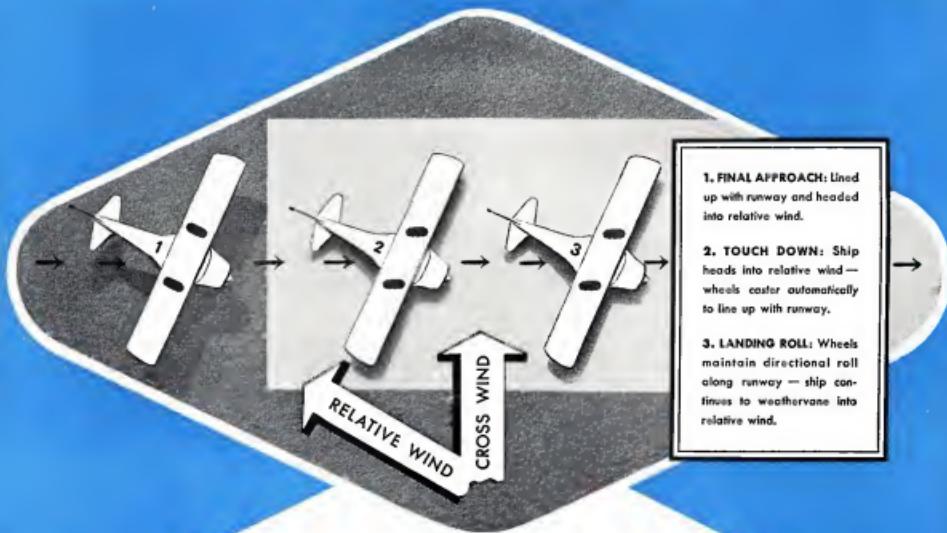


AVIATION WEEK

A McGRAW-HILL PUBLICATION

OCT. 18, 1948



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MORE AIRCRAFT LAND ON GOODYEAR TIRES, TUBES,

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Anson L. Johnson, Thompson Trophy Winner

1948 NATIONAL AIR RACES, CLEVELAND AIRPORT
SEPTEMBER 6

300 miles—20 laps of a 15-mile quadrangular course—
average speed of 383.767 miles per hour



THE PILOT: Anson L. Johnson of Miami Springs, Florida, former testpilot in the U.S. Air Force. During War II, he served as ferry and transport pilot. He learned to fly at the age of sixteen. Now twenty-eight years old, he is a pilot for National Air Lines.

THE PLANE: The ship flown by Johnson was a converted P-51 Mustang fighter powered by a Pratt & Whitney engine. It is Johnson's home, he said, "the European" he himself had built and painted.

THE EVENT: The Thompson Trophy Race, initiated in 1929, has become an aviation classic. It is the recognized world-championship for air speedsters around a closed course. To fly this tight closed circuit is a grueling test of both pilot and plane. It calls for skill, daring and judgment. Pilots wear wide shoulder straps, crash helmets and goggles.

THE PURPOSE: The National Air Races is a great proving ground for improvements in wings and motors. The "Thompson," because it demands constant banks in a circling race of a plane's speed and moment under conditions that require utmost maneuverability with wide-open throttle. Just how severe is this tested by the fact that 7 out of 10 entries in the 1948 event were forced out under a blinding 400 miles per



hour pace, the fastest single lap was 415.997 miles per hour. The "Thompson" is dedicated to the development of faster, safer planes—the combination that will hold our Country's commercial and military leadership in the air.

THOMPSON TROPHY: The Thompson Trophy itself is of bronze, 49 inches high, designed by the noted sculptor, Walker A. Stow. This proud trophy is engraved with the names of the winners, their average speed, and held by four acrobatic girls. For permanent possession, pilots who rank first, second and third receive gold, silver and bronze plaques. The prize purse for 1948 was \$40,000.00, of which Johnson received \$10,500.00.

THOMPSON TROPHY WINNERS:
1929—Davis, 194.99 mph + 1938—
Hawkins, 291.91 mph + 1931—Beagle,
336.95 mph + 1939-40-41-42-43-44 mph
1933—Wesel, 227.85 mph + 1934—
Tamm, 249.12 mph + 1935—Neumann,
259.19 mph + 1936—Bennett, 304.26
mph + 1937—Eliot, 356.91 mph
1938—Tamm, 282.41 mph + 1939—
Tamm, 309.53 mph + 1945—(Piston
Engines) Johnson, 372.95 mph + (Gas
Engines) Lanchester, 355.85 mph + 1947—
(Piston Engines) Gorden, 396.10
mph + (Gas Engines) Park, 300.75 mph.

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AVIATION WEEK

Vol. 19, No. 36

October 18, 1948

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NEWS SIDELIGHTS

Air Parcel Post

Post Office officials are disappointed but not disheartened at first rough estimates placing the September parcel post volume at between 250,000 and 300,000 lbs. This is markedly below the \$1,000,000-to-a-month volume — ten percent of the current surface parcel post business — the Department concedes reluctantly.

Both Post Office and airline officials agreed that the main reason for the poor first month showing on air parcel post was delay in promotion. Business circles and the public generally are not yet widely acquainted with the new service. The advertising campaign, to get air parcels in just now, is getting into full gear.

Air Transport Association reports that air parcel post to date has not made a noticeable dent in Air Express business, which has leveled off monthly.

Parts Extrusion

The Air Force and Navy are taking another close look at the \$488,800,000 worth of surplus engines and parts which the War Assets Administration is trying to peddle before it goes out of business next Feb. 28. The transcription station on military transport aircraft imposed "Operational Value" has caused the administrators to set whether this doesn't mean immediately that all the engines thus thought were fit made a survey last spring.

Both WAA and the military are afraid of Congressional legislation if they are forced to sell off such large quantities of aircraft parts for which bids are not obtainable. Besides, a modified Project J-3, and probably others will be no major difficulty in making a "good neighbor" for civilian aircraft flying in commercial air traffic, out of the Deck, as well.

Break for Alaska

Residents of Alaska who believed they were "locked up" by airlines holding onto the territory during the rightward West Coast maritime strike of 1946 find themselves getting a better break during the present shipping ban.

In 1946, Alaskans carried, alone air lines (apparently nonchartered) operating chartered aircraft rates for heading out to the Pacific Northwest. This year, with more planes available and more passengers accepted for the business, both passenger and cargo rates on the Alaskans can have actually dropped during the strike. Pan Amer-

Air Force Shuffle

U.S. Air Force will continue its reshuffle of the high-intermediate echelons, placing the new position of Chief of Staff, Force Readiness. Next to go from the top level will be Gen. Max S. Fanchon, now vice-chair of staff. Fanchon, who will soon be eligible for retirement, will be replaced by Lt. Gen. Laurance Naird, now deputy chief of the Air Staff for Operations.

Gen. Joseph T. McNamara is not expected to remain as head of the Air Materiel Command much longer. Most high-priority items in McNamara's May Gen. K. B. White, new AMLC director of procurement and industrial planning.

Air Force also has cut charges for flying cargo and short products in Alaska, while, like Alaska, has been troubled by the northern dispute.

Next on the Quiet Program

Next project on the slate for Aerospace Research Foundation is another, a to try the shooting effects of nuclear, radiation, gunning, and missile weapons, radar countermeasures and electronic jamming on the Guidance Deck weapons.

Popher applications are considered for the next several objectives among present day industry noise reduction. The quieting efforts were demonstrated effectively last month on a Boeing Voyager and a modified Project J-3, and probably others will be no major difficulty in making a "good neighbor" for civilian aircraft flying in commercial air traffic, out of the Deck, as well.

Court Fight as Flight Training?

These for re-administration of the GI flight training wage plan are placed squarely on Veterans Administrator Carl Gray by Edward A. Kientz, newly-elected national commander of AMVETS, but not, in a statement preliminary to filing federal legal action against Gray.

In 1948, Alaskans carried, alone air lines (apparently nonchartered) operating chartered aircraft rates for heading out to the Pacific Northwest. This year, with more planes available and more passengers accepted for the business, both passenger and cargo rates on the Alaskans can have actually dropped during the strike. Pan Amer-

ican wants to enforce the findings. "The voluntary and anti-retrograde efforts of the Administration is demanding detailed and effective enforcement of such flight means, laws or no alternative," Kientz said.

Long Range Bombers

Strategic significance of the Convair B-58 refueling of the Fort Worth decision, last is that USAF will soon have a combat group capable of delivering the atomic bomb in significant quantities to any possible theater without the help of a move into advanced bases.

For example B-58 groups now in Europe are an accurate pointed at Europe but would face a heavy direct concentration bombing problem because of already well-armed air defenses from that country. However, B-58s taking off from North America have world wide air defense warning and could use a wide variety of approaches to target areas.

Recent RAF-USAF maneuvers over England indicated that even the highly developed British refueling fighter system was not effective against high altitude long-range strategic nuclear countermeasures. The B-58 will rely primarily on cover of night at high altitude, radar countermeasures and altitude for the mission rather than armament or the primitive fighter.

Labor Shortage???

US Employment Service believes the aircraft industry will not have too much trouble in drawing labor from other fields to assist its expanded production programs. Relatively high wages, better working conditions and large-scale use of women as the main attraction on the aircraft assembly line, says USIS. Skills learned in war will be tremendous dividends, short aircraft workers, electronics and mechanics with A and E licenses.

Lockheed Labor Peace

The three year study of the National Planning Association on the "status of labor peace" will include a report on the peaceful relations of Lockheed with the International Association of Machinists, independent unions being headed by Dr. Clark Kent, director of the University of California Industrial Relations Institute. It will be one of 15 reports made by NPA.

FOR THE NEW TELEMETRY BAND

Bendix Pacific MODEL TXV-2A TRANSMITTER

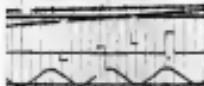


The Bendix Model TXV-2A Transmitter is a VHF direct FM transmitter developed to supplement a complete line of telemetry components designed for use in the FM/TM telemetry and referencing systems.

Complete referencing facilities are available at Bendix Pacific including not only the manufacture and supply of components, but also consultation and application engineering, field operations, data reduction and engineering consultation.

SPECIFICATIONS

Frequency range: 300 mc to 237 mc
Modulation: ± 12.5 kc
Power output: 100 milliwatts in 40 ohm and 6 watts at 45 ohm
Normal output: 0.5 watt into 51.5 ohms
Weight: 27.5 pounds
Case dimensions: 2 inches in diameter—3½ inches long (excluding connectors)



Additional information on the
TXV-2A transmitter
or other telemetry
components or services
is available upon request
from qualified companies.

Pacific Division
Bendix Aviation Corporation
BENDIX AVIATION CORPORATION

Test Control Office 475-2700, Inc., New York 10, N.Y.

AVIATION CALENDAR

Sept. 25-26—National Aviation Club, 26th and 27th, 1948.

Sept. 16—ATA Personnel Aircraft Council, Denver, Colo.

Sept. 18-19—American Society of Naval Architects and Marine Engineers, Inc., Hotel Statler, New York City.

Sept. 20-21—Society of Automotive Engineers, 40th Annual Autumn Meeting, Hotel Hotel, Cleveland, Ohio.

Sept. 20-21—10th Annual Autumn Meeting, Hotel Hotel, Cleveland, Ohio.

Sept. 21-22—10th Annual Flying Engineers meeting, Hotel Hotel, Cleveland, Ohio.

Sept. 22-23—10th Annual Meeting, Hotel Hotel, Cleveland, Ohio.

Sept. 23-24—Society of Automotive Engineers, 40th Annual Autumn Meeting, Hotel Hotel, Cleveland, Ohio.

Sept. 24-25—Society of Automotive Engineers, 40th Annual Autumn Meeting, Hotel Hotel, Cleveland, Ohio.

Sept. 25-26—Flight Safety Foundation, annual members' investigation course, Hotel Hotel, Cleveland, Ohio.

Sept. 26—American Institute of Aeronautics and Astronautics meeting, New York City.

Sept. 26-27—American Society for Testing Materials meeting, Atlantic City, N.J.

Sept. 26-27—American Diesel and Gasoline Association, Hotel Hotel, Cleveland, Ohio.

Sept. 26-27—American Aviation, Hotel Hotel, Cleveland, Ohio.

Sept. 26-27—American Institute of Aeronautics and Astronautics meeting, Hotel Hotel, Cleveland, Ohio.

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FROZEN STIFF-

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This AiResearch oil cooler, tailored especially for the D.C. 6, weighs less than 35 lbs. It keeps oil flowing smoothly no matter how cold or hot flight temperatures become. And a vital element—the atmospheric surge protection valve—eliminates possible failures and ensures a constant flow of oil under the most extreme operating conditions.

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AiResearch pioneered these oil coolers of wrought-steel aluminum, instead of heavy copper. And, of utmost importance, AiResearch preferred the exclusive "monolithic joint" construction, so that thermal expansion can quickly and easily be done in the field, with no sacrifice in performance. Furthermore, to meet rigid Air Force Spec ANC 7b, every AiResearch

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NEWS DIGEST

DOMESTIC

Robert J. Collier Trophy committee will meet in Washington this week to select the aircraft for 1947 of the most outstanding aircraft in the field of flight. It has the greatest influence in U.S. aviation.

Major Alfred J. Williams last week presented his twelve-year-old Creation FIF "Goliath" to the Smithsonian Institution. The orange and black-striped biplane, often seen at air shows, was believed to be the last of its type operational.

Karl Compton, president of Massachusetts Institute of Technology, last week succeeded Dr. Vannevar Bush as chairman of the National Defense Research and Development Board. Bush retains to the presidency of Carnegie Institution.

Twelve Navy fighter and attack planes, B-17Fs, F8Fs, ADs, made a nonstop McMurdo Field, Gold-Henderson flight, refueling en route, attained at 8000 feet altitude. Flight was to practice over-shooting method.

Doffs Air Lines has taken delivery on the first of five DC-3s. Reschedule expected to be accepted before the end of the year.

FINANCIAL

Northeast Aviation Corp. reports net income for nine months ending Sept. 30 of \$123,002, while taxes last half-year scarcely functioned. Net loss on securities sales amounted to \$156,956.

FOREIGN

Sir Arthur Whitten-Brown, who made the first nonstop Atlantic crossing with the late Sir John Alcock in June, 1919, died in London at the age of 61. In a Victoria Valley boulder, the two men made the 1919 nonstop crossing from Newfoundland to Ireland in 16 hrs. 32 mins.

Australian government has objected to the Canadian government's plan to audience Canadian Pacific Airlines to operate a trans-Pacific service jointly with Australian National Airways. Australian government has long been opposed in principle to operation of international services by independent-owned airlines.

Civil Aviation Administration has opened a new branch in Boston. Army Air Office will be headed by D. L. Wallace, formerly with Civil Aeronautics.

Palau will establish a government-owned airport and terminal, to handle both for the country's two airlines. Company is expected at \$1.2 million, with the government putting up \$630,000 and Orient Airways and Palau each contributing \$375,000.

INDUSTRY OBSERVER

► Chance Vought's new tailless Navy jet fighter (XF7U-3) has made off several test flights at the Naval Air Test Center, Patuxent, Md. The XF7U-3 is powered by a pair of Westinghouse 24C jet engines located at the rear of the aircraft on the side of the fuselage. It has a tricycle landing system developed for Neumann F11. Wing trailing edge slot but also has smaller canards on the two vertical fins located on the wings for increased stability. Landing edge flap can used to get high lift characteristics out of the XF7U-3 (not a high lift at low speeds). Assessment is based on the one. Except for the location of the vertical fins, the XF7U-3 configuration is roughly similar to that of the Northrop X-4, high speed research plane.

► A. V. Roe of Canada are building the XC-103, twin jet night fighter for the Royal Canadian Air Force, at Toronto, with hopes of also selling it to the Royal Air Force and the U.S. Air Force. The two jet engines, also being developed by Avro, are mounted above the wing root in either side of the fuselage. Tricycle landing gear and a relatively long aircraft with a single tail and other design features.

► Another Avro Canada project for a jet bomber/trainer (XC-111) has been abandoned after consideration of a number of anticipated production difficulties. The trainer was to have been powered by the Chieftain, a Canadian-built jet engine.

► DeHavilland is working on a new fighter project designed to replace its famous Mosquito. The new fighter will feature twin jets, swept-wing and tail surfaces and twin tail booms. Meanwhile deHavilland's newly-formed company, Avro, is producing the Mosquito Mark 58, a new night fighter version of the proved Bomber. Sweden is expected to place another order for more Vampire jet fighters with deHavilland.

► Convair-Liner production at San Diego has reached the rate of 28 transports per month. Convair spokesman tell Aviation Week that by the end of October 60 units will have been completed. At the end of September 61 planes had been delivered to follow: American Airlines, 17; Pan American, 15; Western Air Lines, 6; Continental Airlines, 2; KLM, 2; and Trans-Canada Airlines, 1.

► Curtiss-Wright claims that the XF-57, four jet night fighter, flew at better than 600 mph. During Phase I flight tests at MacDill, Company did not specify whether the craft was held to level flight. Lee Miller, Curtiss-Wright test pilot from the engine division in Columbus (Md) and Mr. Richard L. Johnson, USAF helds of the world speed record, are doing the test work on the F-57. Production model F-57 will be redesign for test Convair Electra J-47 jets.

► McDonnell's XF-88 long range USAF fighter now at MacDill for flight testing, will carry 20 mm cannon as its arm and is expected to climb at better than 11,000 feet per minute. Minimum operating speed should be more than 2100 mph.

► Howard Hughes will begin his water tests of his huge flying boat during October with flight tests scheduled for December. Shultz said the big boat off the water likely last November during high speed taxi tests but no real flights have been made in the controversial craft.

► About production division, Australian Supply and Development Department has awarded a contract for an experimental aircraft incorporating boundary layer control. The new design will utilize the "tulip" profile developed by Dr. Slobey Goldstein. The wing will be tried initially on a fixed glider to determine basic design parameters before construction of the aircraft begins. Advantage of the shape is its use of as high as 40 percent wing thickness with its high lift yet with drag of a conventional wing only 10-12 percent thick.



Display of the B-36's increasing striking power was made at Ft. Worth during formation flights in the air, and

New B-36 to Give USAF Greater Range

Data released for first time on B model of giant bomber, soon to go into service.

By Robert Scott

Fort Worth, Tex.—By the end of the year the U. S. Air Force will have a striking force of Convair B-36s well capable of delivering atomic bombs over a 12,000-mile range.

This comes from the first news since the concept of strategic air power was originally propounded a nation that has the technical equipment to put that theory into practice. At the present time 20 Convair B-36s will be delivered to the 7th Bomber Wing of the 1st Air Force by next January, but there will still be time to bring virtually all of the eastern hemisphere under its nuclear bombardment from bases on the North American continent.

► **Bomber Testimonials**—Recognition of the B-36 equipped 7th Bomber Wing as the spearhead of the Strategic Air Command's striking force was formally made at a press demonstration here last week. Among the witnesses who offered a series of sterling tributes to the power of the B-36 were Gen. George C. Kenney, serving chief of the Strategic Air Command, and Gen. George E. Stratemeyer, chief of the Air Materiel Command, who has the best record of effectiveness of the B-36. Maj. Gen. George F. Rader, 7th Air Force commander, and Maj. Stephen F. DeLoach, USAF test pilot on the B-36 program

stressed the unapproachable safety of ready for combat.

With the B-36 the 7th, commanded by Col. W. C. Clark, expects to be a fully combat-ready organization. At present 11 B-36s of the Convair force at Fort Worth with another 13 on the field assembly line. First deliveries of the B-36s to the 7th wing are expected within two months. The 40-acre plant here turns out one B-36 per week.

► **Combat Versions**—The B-36B features a new version of the Pratt & Whitney R-4360-11 engine that boosts each horsepower from 3000 to 3800, providing a total increase of 12,000 hp over the A model. The 46 months are completely equipped with the latest in the art of combat tactics and wing tips, the only identification in Arctic areas to which the B-36A has flown is 8000-mile emergency unattended combat mission, dropping 25,000 lb. of bombs at the half-hour point and averaging 225 mph for the extra distance.

Maj. DeLoach told of another B-36A mission he flew early in October carrying 12,000 lb. of bombs to Moscow. Bomb release trouble was encountered over Manchuria, leaving over 12,000 pounds hanging up in the radio for the return trip to Fort Worth at a speed of 17,000 ft. The B-36A averaged 215 mph.

► **Technical Details**—The B-36s with which the 7th Wing is now equipped do not have armament, are still experiencing some structural difficulties and have the usual successive troubles of a large new aircraft. They are being used primarily for training and are not yet in



Convair showing of newly-completed B-36 at Convair Air Force Base and Convair's production line plant across the field.

Through the use of external boost equipment and the wheeled cargo trailer, Convair officials expect to be able to unload and load the B-36 with out stopping the engines. An 8-month unassisted USAF version in the cargo carriers Convair has strapped up its production of the truck line has been week. 60 two-man crews.

► **Bomb Bay Tanks**—Another basic modification for the B-36B consists of a 3000-gallon gas tank specifically developed by Etkinson, Fox and Rubber Co. of Akron for the B-36. Four of these cells can be carried in the B-36's bomb bay to add 32,000 gal. of fuel to the 21,150 gal-carried in wing tanks. Integral tanks are used for wing fuel with special bullet proof cells guarding particularly vulnerable spots. Unloading of the wing is made possible by 7500-class cranes which are supposed to be 1000 lb. heavier than the standard 1000-ft. crane.

► **External Load**—The B-36 can be varied by the use of different cells from 7250 pounds, depending on the 42,000-lb. C-47/C-54 transport, largest conventional bombs available, and since that one atomic bomb. Minimum bomb load dropped so far has been 72 one-ton sand packed bombs over the Gulf of Mexico.

► **20 min. Turnaround**—The B-36 has an unusually long turn-around with a radio controlled lift truck doing a 17-minute job. The lift truck is 12 tons in weight. Tail gunner can assist actively by radio from a station below the rear waist gunner.

To reduce drag during the long crating periods 1000-lb. turntables are in the nose and tail are retractable. Two heavy 20-ton cranes, two trucks are needed at the base of the aircraft and are controlled from the top nose sighting

towers. A smaller pair of nose 20-ton turntables are located in the rear belly and controlled by the lower nose sighting station. Another pair of twin 20-ton turntables are located on the top of the fuselage just aft of the radome and controlled by the forward sighting station. One pair of 20-ton cranes are located on the top panel of the lower fuselage's platform.

► **15 Min. Cycles**—The B-36 is unusual by a crew of 15 including three pilots, two radio operators, two navigation, bombardier and radar operators and two gunners. One engi-

neer or controller stationed at a rear sighting station to check operation of flaps, gear, propellers and engines mere use of these are visible from the cockpit.

Piloted nose section has three decks with two pilots and the flight engineer in the top deck. All engine controls are located in the middle deck. Radio operator is on the second deck with navigation, bombardier and radar operator in the lower deck which opens onto the platform nose. Three tail sections are located in the pressurized tail section for crew rest during flight.

Convair B-36 Bomber

SPECIFICATION AND PERFORMANCE DATA

| | |
|--------------------|---|
| Max Gross Weight | 26,000 lb. |
| Length | 106 ft. |
| Width | 56 ft. |
| Height | 29 ft. |
| Engines | 6 Pratt & Whitney, pusher type |
| Max speed | 360 mph at 16,000 ft. |
| Max cruising speed | 300 mph (indicated) |
| Service ceiling | 49,000 ft. |
| Max range | 13,000 mi. with 10,000 lb. of bombs |
| Endurance | 10 hours at 16,000 ft. |
| Design load limit | 10,000 lb. for nose, 11,000 for tail, 25,000 lb. for tail section |
| Max bomb load | 72,000 lb. |
| Max cargo load | 45,000 lb. |
| Gear | 15,000 lb. |
| Fuel capacity | 15,000 lb. |
| Oil capacity | 15, including 4-ton sand case |
| Landings gear | 21,150 gal. on wing tanks, 12,000 gal. in bomb bay |
| Propellers | 4 Curtis Electric, seven-blade pitch |
| Armament | 3 M-61, 15-hour diameter, 16 25mm canons and one 50mm cannon |

Permeated components are connected by an 85 ft. stand through the levels bay. Conways raise the barrel lying on their backs on a four-wheel scissor and pulling themselves along an overhead cable.

► **Conway Team-Conver's** giant West Works plant now rolling out a B-52B every week in 15,000 man hours, headed by D. J. Clew and J. W. Larson, leading engineers of Conway's West Works division.

Production of the B-52 requires a tremendous parts fabrication within the Conway plant to produce 85,000 special parts for the big bomber. In addition to those made by subcontractors and purchased as government furnished equipment, total of 1000 machine tools and 87,000 production tools are used. Assembly line has 5900 square feet of assembly and the final review of the plane. The newest B-52B has taken up the space formerly used by two Conway B-51 production and assembly lines during the war.

► **Production** of B-52B production will move well into next fall and overlap the beginning of the Northrop Convair B-45, eight jet bomber, assembly line. Letters of intent under which Convair will build the Northrop designed bombers was received at West Works only in October. Plans for the B-52B equipped with turbo instead of piston engine installations and featuring the Pratt & Whitney VDT engine have been submitted at least for the present. However, very serious difficulties in the intermediate installation would probably cause extension of the B-52B to 1951 and beyond the 1950 mark and starting off the twin-VDT planes that were expected to add 100 mph to the no-engine bomber's speed.

Gen. Kenney announced upon the USAF attitude toward the B-52 program when he was asked if he thought the B-52 had a future, "I would say that it has a present." Kenney replied. Obviously the USAF will rely on the B-36 until something better comes rolling off the production line.

Entart First American Elected FAI President

William R. Entart, president of Standard Aerodynamics, Inc., Tuxedo, N. Y., and former NASA president, is the first American to be elected president of the Federation Aeronautique Internationale, 45-year old world governing body of sporting and private aviation. Entart was elected at the recent FAI conference in Paris, succeeding Lord Balhous of Tux Conference, who stepped, with three dissenting votes out of 26 nations represented, resolution of the U. S. delegation to hold the 1949 FAI conference at Cleveland, Aug. 28, preceding the National Air Races.

Entart's co-presidents were Russia, Poland and Norway.

John J. McLean, former representative of the National Advisory Committee for Aeronautics at the embassy in Paris, was elected FAI vice president from the United States.

NASAO Meets

Joint enforcement move expected as outgrowth of Boston sessions.

By Alexander MacNally

BOSTON—Confidence to coordinate the work of federal and state aviation officials in a vigorous enforcement policy to combat low, reckless and drunken flying, and selected efforts for flying safety education will be the product of the most important outgrowth of the recent conference of the National Association of State Aviation Officials.

Dr. W. R. Brattin, CAA director of safety, aviation, has first appearance before the officials from 45 states who were assembled at Boston, pledged full CAA cooperation in a federal state conference and gave the state officials a firm guarantee that enforcement coordination would be the result of such a meeting as he held very soon. Cooperation will be indicated by Joseph J. O'Connell, Jr., CAB chairman, in behalf of his agency.

A statistical report on enforcement against illegal flying, issued by the state aviation officials, showed that illegal aircraft at a light airplane by CAA. Challenged by L. J. Schwabach, Missouri state aeronautics director, CAA officials admitted that the figure was not directly comparable, and that the count was down on successive years.

► **New President** Edward F. Knapp, Vermont aeronautics director, was elected president of NASAO, and James McMillen, director, Indiana state aeronautics director, was elected vice president. Entart was reelected chairman of the executive committee. Knapp and McMillen are confirmed in that position, with office at Washington.

Prof. Leon Bellinger of Harvard University Law School called upon NASAO and federal agencies for help in developing a more favorable negotiation environment for claims against the greater utility of personal aircraft if improved aircraft are provided which can be used small enough to land safely and quietly. He suggested a new category be developed to account capable of using such facilities.

Members of the group watched two biplane airplanes modified by Aerostar

Research Corporation, make low-level landing and takeoffs at a temporary strip at Harvard University campus. Later they pressed a resolution asking seeking additional federal support for the foundation's program to improve the personal airplane.

► **U. S. Senate** Owen BREWSTER (D-M.) received an acknowledgment of his Congressional Air Policy Board in the 80th Congress summer and emphasized importance of continued Congressional support on aviation legislation in the future. He urged necessity for action on the commercial transport prototype subcommittee which has not completed in the task of the closing of Congress.

CAB Chairman O'Connell stated that erroneous application of administrative action, which he said was not intended, was not able to handle. He called for unanimous acceptance of federal and state governments, pointing out the evils of legalizing and legalizing legislation.

In other resolutions, NASAO paid particular attention to airport problems and accident training. Resolutions called for:

- Issuance of Federal Airport Act appropriations to \$100,000,000 a year, a sum considerably provided under the Act, for the remaining four years.
- Authorization for federal allocations up to 75 percent of costs for Class I airports if state and local contribution does not exceed \$25,000.
- Amendment of the Airport Act to allow issuance of grant appropriations if the state grant has been received, and to except preceding wages and preceding unit contract rates.

• Congressional assistance to consumers which have acquired overvalued aircraft originally built for military purposes, so that they may be properly amortized.

• Development of improved serving facilities at airports.

• Appropriation of \$5,000,000 a year for a year for federal state spending.

• Use of civilian flight schools conducted with high schools, colleges and universities, as a method of securing foundations and indoctrination units for aircraft crews for all potential military aircraft interests.

• Aircraft tax rates.

• Reasonable insurance rates for personal aircraft at no overhead, when certain fixed fee of a traffic pilot plane.

• NASAO board of directors was instructed to ask CAB for the reactivation of the G-2 flying training program and for the issuance of the permit in the name of the Veterans Administration's Board of Adjustment of the residue of Congress in deriving thousands of veterans from their local flight training centers.

Members of the group watched two biplane airplanes modified by Aerostar



New Four-Engine Lightplane

A four-engine executive-type plane has made its first flight at New Orleans and is believed to be the only plane of its kind ever to fly in this country, and possibly the world.

Built by Monted Vincent Aircraft, Inc., the craft is powered by four Continental 140-hp. engines driving four-bladed fixed-pitch propellers. The fuselage is now awaiting a second plane to be used in static testing for a CAA certificate.

► **Five-Place**—The Monted Vincent plane is all steel, comes fully including pilot, has a gross weight of 48,000 lb. and empty weight of 3208 lb., which it builds have to cut to 3150. Span is 49 ft. and length 34 ft. At the rate of the cabin is a hanger.

Cruising speed at 145 mph. and in flight range with a selected panel load, tank, and fuel, each engine will a total of 172 gal.—roughly for eight hours of flying at cruising speed. Fuel tank will be installed of controllable per

petrol, rather than one pressurized of equivalent output. Monted Vincent believes it can attain the same range of safety possessed by transports of a larger size.

Only other four engine craft of this size up to the present are general both heavy and slow to test configurations of large planes, in the same other experimental planes.

► **Clouds**—The company, composed of four As Fairey powered and experimental aircraft, mounted engines, already has spent a considerable sum of money on the "Star Flight." In commercial production still is too far away for any firm to be in it, but at this time it looks like the plane would cost more than the "Lightning" and the "Cessna" mounted engines which will be below the two-engine Bischetti.

Monted Vincent occupies part of the former Bissell hangar of Michoud, an area and has headquarters at 125 N. Houston, New Orleans. Designers of the "Star Flight" is Art Turner, engine engineers with Lockheed.

Aviation Officials Active in Securities

Substantial trading by leaders of Curtiss Wright Aircraft Corp. highlights a series of security sales induced recently by the Securities and Exchange Commission.

► **Monted Vincent**—Monted Vincent has sold 111 shares of its stock in six trading days preceding the date of the recent sale, July 10. On July 13, Bischetti purchased 200 shares. The stock, unquoted over the counter, has been trading since the stock market reorganization.

► **Monted Vincent**—Monted Vincent has sold 111 shares of its stock in six trading days, on July 10 and three subsequent days, to April 20, 1948, at prices ranging from \$10 to \$12.

It also purchased 100 shares of Curtiss Wright's stock on April 16, preceding to the date of the recent sale, July 10, at prices ranging from \$10 to \$12.

► **Bischetti**—Curtiss Wright's management, headed by James C. Bischetti, has sold 100 shares of its stock in six trading days, on July 10, 1948, at prices ranging from \$10 to \$12.

► **Bischoff**—Curtiss Wright's management, headed by James C. Bischetti, has sold 100 shares of its stock in six trading days, on July 10, 1948, at prices ranging from \$10 to \$12.

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Sixth National Clinic Meets This Week

America's sixth annual Clinic, put on by the legislative committee method and but one at Springfield, will get down to serious business Tuesday, Oct. 29, at Detroit.

Working sessions at the Masonic Temple will receive attention in sessions of delegations from 14 various associations of the aviation industry and allied interests, and will end in a formal meeting session by putting bills of rights before the legislature.

► **New Bills**—Appropriately, 20 bills of policy clearly prepared in advance of the meeting will be introduced in the Senate and House by various delegations as a consequence of legislative hearings, federal-state cooperation in areas, federal aid administered by CAA to develop and diversify flight training in ROTC, federal aid for aviation education, enhancement of mass-aviation private pilot course development and pre-arrangement of liaison aircraft.

Also that refers applicants for flight training to respond to provide as greater evidence that such courses are vocational than a request of students at other courses, and endorsement of recommendations of the Congressional Air Policy Panel.

Other policies include Gov. Kim Sarge of Michigan, and NAA President Louis T. Lassance, endorsement, Rep. Nyman, Des Moines, sponsor, Robert Ranck, AAA executive vice-president, legislative committee, William F. MacCracken Jr., Washington, legal counsel, Cira Hough, Michigan Aviation Committee chairman and Eugene Fribell, Detroit Metropolitan Aviation Authority director, former officer Joseph T. Gearing, Jr., journalist Arnold Conrad, transportation director, Charles V. Vater, transportation director, Auto Club of Michigan, secretary, R. M. Pfeil, NAA executive vice-president, director.

After three days of legislative assembly meetings, the Clinic will adjourn Thursday afternoon. Major social events scheduled are a bullet supper and dinner at the Bess-Coffield Hotel, Monday night, preceding the opening of the legislative sessions, and the Clinic banquet, Wednesday night at the Masonic Temple.

Unfreeze More Money

U. S. Air Force has taken the first step in unfreezing another \$75,000,000 of its fiscal 1949 funds for purchase of additional government-owned aircraft and minor modifications on planes already in production.

USAF's request to allocate the \$75,000,000 was sent to Defense Secretary

James V. Forrestal last week at the first move in the new familiar path to final certification by the President. Last previous USAF request for \$80,000,000 to buy 100 new planes (Aviation Week, Sept. 27) was made by the then-day's chief of staff, with an additional \$100,000,000 for long-range guided missiles still stuck in Forrestal's office.

Most of the items included in the \$75,000,000 fund will be reported by cancellation of regular aircraft and subsystems, solely from Defense funds, at the request to be purchased will not be available until the President approves the USAF request.

Marriott and Kemp In CAA Shift

Joseph S. Marriott and S. A. Kemp were voted to the top-tiered Washington CAA executive staff last week, as the result of the reorganization of the agency's hierarchy. The new structure was announced at the annual meeting of the American Aviation Writers, Oct. 11, 1946.

Marrott, who has been with agency administrators at Los Angeles and is regarded as one of the ablest CAA regional men, becomes director of the office of aviation safety, succeeding Al S. Koch. The latter is also director of a new office of program planning and evaluation. James B. Reed, staff safety and inspection administrator, becomes acting administrator of the region in till the Marriott vacancy.

► **Kemp to Washington**—Kemp, who has been with the regional office administrator at Atlanta, has been assigned to the newly created office of aircraft development, which combines aviation information, aviation education, personnel training program and air marking generation.

With these changes and the previously announced removal of H. A. Hock, the health monitor, from the post of assistant administrator (deemed) at Atlanta, to head the regional office at Los Angeles, his replacement by his deputy, Edgar F. French, who will serve as his chief assistant, the top CAA assignments are complete.

► **Liaison Transferred**—The transfer of Glen M. Lample, former CAA aircraft official, to the part of eighth region (Alaska) airport administration, was the announced. Lample has been director of air navigation facilities service, one of the offices which will be affected in the reorganization of the agency. He will supervise construction of and later manage the two big new Alaska airports at Anchorage and Fairbanks, the total cost \$12,000,000 in fiscal funds was allotted this year.

There are no changes contemplated immediately in the regional administrative posts, except for the Marriott Read shift in the sixth region, and Kemp

move. No successor was assigned immediately for Kemp at Atlanta.

► **Keep Posts-Like**— unchanged are Frederick E. Lee, deputy administrator, William C. Kline, director of airports, William M. Shurman, director of liaison and administration, Bennett Griffee, director, Washington National Airport, and Richard T. Eshel, general counsel.

These relative assignments in Washington and in the field are not yet completed. Districts and regional administrators have been asked to submit their recommendations for their district check and subordinate personnel. It is anticipated that a large majority of the subordinate officials will remain in their present posts, but the complete detailed picture of CAA's "new look" will not be disclosed probably until mid-November.

Maintainers Strike At AA Unlike

Threatened action by maintenance employees at LaGuardia Field will bring an American Airlines strike last week, but chances are good that it would never come off.

Conflict between the nation and local unit of the Transport Workers Union (TWU) developed from a recent level of 43 employees when the carrier transferred maintenance facilities to Tulsa, Okla. Originally, AA had said Oct. 1 it would close with four busses, but the deadline passed with no action from the union.

► **Union Demands**—Local 501, which includes maintenance plan open bids for flight engineers using insulation, set terms of strict maintenance as part of LaGuardia, and a 10% cut of pay of those who work by transfer to Tulsa. As an alternative, it wants maintenance on a percentage per plane.

American stated that a strike could violate its agreement with the union that stipulates no strike before Dec. 10. At midweek, the union seemed inclined against a strike, but it is a work arrangement now off local president Barnard. Memphis claims he has support from other AA stations whose mechanics are TWU members. That would mean a nation-wide strike against American, and possible interruption of service.

Sale to China

State Department last week authorized sale of 41 P-47 fighter planes with full military equipment to China in August. The planes were sold for \$545,000. Their original cost was \$638,441.

The department reported sale of 235 engines for C-46 and C-47 cargo planes to China in August for \$397,100. The total 18 planes of these aircraft were

delivered engineering optimum that the judiciary at it can be used to force more reasonably and fairly in all operating respects.

► **Flight Test**—A major change in the high speed transport aircraft will be to shift fuel from wings, which will be too thin to hold the quantities of fuel required to maximize integral baggage tanks. Further, using structural strength, any fuel tank will be expected to absorb the force damping effect of air at high altitudes during the progress of transonic startup.

To SAE's management engineer

the design response induced temperature extremes which was reflected

perfectly during one panel session by the suggestion of a "heat-insensitive fuel" to the fueling tanks of the design plane.

This was suggested by Harold D. Heisler, chief engineer, aircraft service office of aviation week, CAA, and was being conducted in the addition of a transonic aircraft to the current committee of otherwise intransigent members.

C. L. Johnson, chief research engineer for Lockheed Aircraft Corp., and that still-classified military engine development show that by 1951 the budget will not have to fluctuate at such top speed to obtain maximum results in efficiency.

He said the engine probably will function with greater efficiency at 50 percent power setting. The overall time is expected to be up to 500-1000 hr and the cost of fuel only 15 to 40 percent of the cost of a reciprocating engine operating.

Mike Traylor, vice president and general director of reciprocating engine by 25 percent. He said reciprocating need weight and requires weight against extended use of propeller jet propulsion.

► **Propeller**—Mike Traylor considers even that manufacturers could have the jet transport flying by 1955, the engine anticipated that military contracts would go to large reciprocating costs and production of the initial designs—whether could be adopted for commercial use.

About all the engineers seemed willing to guarantee is that the U. S. is destined for the knowledge to build such a plane. Other them conceded, it would appear reasonable that the aircraft could be built to be launched for flight within 10-15 years.

One thing could change that entirely. If future developments in the all-weather aircraft program were exceptionally successful, aviation could reach nearly 100 percent schedule efficiency within five years. That could bring enough revenue to sustain airline costs in jet transports.

None of the airline spokesmen at the SAE gathering could foresee any immediate prospects of that nature.

William Thompson, American, stated that he and his chief of staff will be quite happy with planes they now are managing least until they have found out how to make what they have produce a profit.

PRODUCTION

Engineers Detail 1955 Transport

Long-range 50-passenger overseas jet plane to cruise at 530 mph, discussed at Los Angeles SAE meeting.

Manufacturers weighing what comes after the DC-6, Strato-lander and Convairliners have some new thoughts to plus with opinions of the country's top engineers.

At its National Aerospace meeting in Los Angeles, the Society of Automotive Engineers turned its membership loose on the problem of finding the upper limit of a "transonic aircraft transport plane" prior to 1955. For a change, aircraft design committees were present.

► **Manufacturers**—The panel could have been set up for flight by 1955 a 50-passenger overseas jet transport capable of crossing 1200 miles at 518 mph at 37,500 ft altitude.

► It is unlikely that such a high speed plane can be economically operated with the government's \$1,164,000,000 all-weather money program becomes fully implemented in 1953.

► **Aerodynamics**—New to deeply involved in aeronautic problems they are unlikely to display more than a passive interest in transonic transports other than some types.

► **Military Contracts**—In considering even that manufacturers could have the jet transport flying by 1955, the engine anticipated that military contracts would go to large reciprocating costs and production of the initial designs—whether could be adopted for commercial use.

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BRIEFING PRODUCTION NEWS

► **Consolidated Vultee Aircraft Corp.** has received letter of intent authorizing start of work at Fort Worth on B-52H jet bombers under contract with Northrop Aircraft, Inc. Consorcio also has subcontracted with Boeing for construction of 367 more long-haul bombers for the B-52. Delays are to begin next spring.

► **Carrier Wright Corp.**'s Columbus airplane plant has received a new Navy order for 500 Mark XII disposable fuel tanks with deliveries to start in December. This brings the plant's total orders for this item to 5800.

► **Sperry Gyroscope Co., Great Neck, L. I.**, has received an order for 1155 gyroscopes taken from the U. S. Army Signal Corps.

► **Thompson Aircraft Products Co., Cicero, Ill.** is tooling for production of jet engine turbine blades for both Westinghouse and General Electric engines. The company long has been a major supplier of blades for Allison engine divisions of General Motors.

► **Glen L. Martin Co., Baltimore**, is installing drawing equipment on 14 PRM-5 Musters at the Coast Guard. Work has been nearly completed on the first four, with modification time running about four or five weeks per plane.

► **Beech Aircraft Co.** has leased additional space in the government-owned plant at Wichita, near its main Service facility. Beech now occupies about one-third of the plant and will use the space for development work and storage.

► **Lackheed Aircraft Service**, MacArthur Field, Sayville, L. I., is having 300 additional workers in field to complete its conversion of C-54s used on the Berlin airlift. (Aviation Week, Sept. 27). Total employment is expected to reach 1100.

► **Rock Aircraft Corp., Chico, Wash., Calif.**, has doubled employment since last spring, is now up to 2100 and is expected to reach 3000 next year. Rock, subcontractor to many of the prime manufacturers on the West Coast, has leased an adjoining plant from the government to take care of its expanding operations.

► **Panzeri Helicopter Corp., Morton, Pa.**, is progressing on mockups of its XH-16, C-54 size transport helicopter for the Air Force, and on the HRP-2 for the Navy.

► **Chicago Vought Aircraft division of United Aircraft Corp.** has moved 20 percent of the 50 million lb. of equipment it is transferring from St. Paul, Conn., to its new plant at Dallas. First plane will be the first production airplane to leave the Dallas plant next March.

► **Jack & Jones Precision Industries, Inc., Cleveland**, has opened a new branch office at 409 Holbrook Professional Building, 2046 Holbrook Boulevard, Hollywood 25, Calif. It will be in charge of P. R. Dept.

► **Kaman Aircraft Corp., Winder Locks, Conn.**, has delivered to the Navy a helicopter rotor and control system, completing one phase of a contract Kaman has held since June, 1947. Navy already has received engineering data on the Kaman system, and the contract specifies further test runs at the National Advisory Committee for Aeronautics, Langley, Va., laboratories.

► **Beech Aircraft Corp., Wichita, Kan.**, has reduced its B-52B production to an 8-a-day for the winter months. Production of Model 18 transports has been reduced to 15-a-month. Beech had been producing from three to five B-52s daily. Employment has been reduced to 2400. Approximately 1750 B-52s have been produced to date.

West Coast Holds Majority of Orders

Improved balance between cut and cost production is shown by a latest annual survey of the aircraft industry, but the West Coast's seven major firms still hold 55 percent of all orders allocated up to this time by Air Force and Navy.

During the war the West Coast industry was credited with loans of more than \$1 billion of aircraft equipment, especially to the Pacific theater, and the period.

It is doubtful that this situation is likely to be repeated in any future production boom.

This is indication that western industry now has become fully equipped for the handling of current orders and a total backlog of \$1,449,215,258 (Aircraft Industries Association figure) represented by Boeing, Lockheed, North American, Douglas, Convair, Northrop, and Ross. The situation shows a gain of \$40,450,000 since Jan. 1. Slightly less than 10 percent of the backlog total is represented by the number of contracts on hand.

► **More orders**—The western firms have added 2,638,023 sq. ft. of production space to plant facilities during the past six months and now declare a total of 27,284,043 sq. ft. of plant area, with another 5,871,173 sq. ft. credited to their subplant holdings. Previous court placards of the seven companies now employ 32,956 persons, their contract backlog an additional 19,870.

Shortage of materials, parts and equipment have eased on the West Coast, but skilled workers—tool designers, master layout men, dimensioners, mill operators, complete molders and plastic parters, anti-tarnish use at a premium and hard to find.

Accident Rate Dropped

The accident rate in aircraft and aircraft parts plants continued to drop during the second quarter of 1948, according to the Bureau of Labor Statistics. For the first half of the year, the defense industry safety frequency rate was slightly below last year, while aircraft parts plants reported occurrence only half as often as they did in the previous year.

In aircraft parts plants there have been an average of 5.5 disabling injuries for every 1000 hours worked, compared with 6.1 last year. In aircraft, there have been 4.5 injuries, compared with 4.8 last year.

For all manufacturing industries, injuries are occurring at a rate of 11.5 for every 1000 hours worked, thus putting the aircraft industry far ahead of the average.



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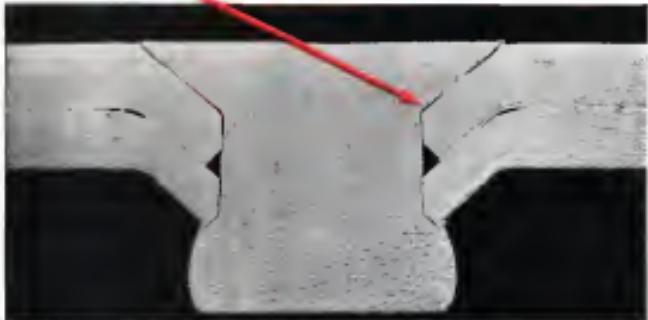
For aviation, Seicom-Vacuum lubricants helped to sweep the way for some of aviation's greatest achievements. Mobiloil flew with Lindbergh to Paris . . . with Byrd to the North Pole . . . with Wiley Post, Amelia Earhart, Sir Hubert Wilkins.

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SEICOM-VACUUM OIL COMPANY, INC., and AIRWAYS MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORPORATION

Alcoa research points the way to
BETTER DIMPLING
of Alclad 755-T6 sheet



Photomicrograph of successful dimpled joint between Alclad 755-T6 sheet.

As soon as aircraft builders undertook the task of riveting of hard, high-strength aluminum alloys such as Alcoa Alclad 755-T6, it was quickly apparent that tools and methods used for dimpling softer alloys would not be suitable. While new dimpling techniques were being developed by the aircraft industry, Alcoa research attacked the problem from the standpoint of improving the dimpling characteristics of the new alloy itself.

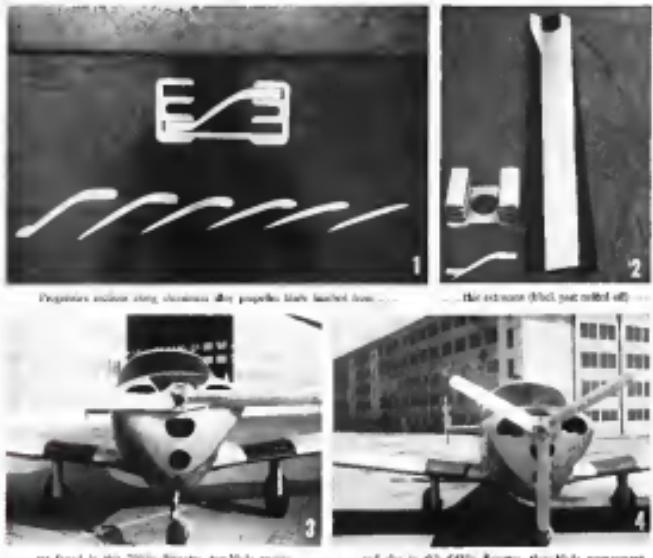
After interrupted aging treatment, in use on all Alcoa 755-T6 sheet since the summer of 1945, improves its cold dimpling qualities as compared

to the original 24-hour treatment. Research has established, too, that hot dimpling without cracks can be carried out at a temperature low enough to avoid damage to the heat-treatment of the sheet.

Alcoa has supplied this basic information on 755-T6 to the aircraft industry to aid in the development of suitable tooling and procedures to fit individual needs. Our complete pool of flight-metal knowledge is at your service. ALUMINUM COMPANY OF AMERICA, 2182 Gulf Bldg., Pittsburgh 19, Pennsylvania. Sales offices in principal cities.



ENGINEERING



Advantages Seen for Extruded Propellers

Thin-sectioned, two- and three-blade, metal airscrews performance-tested in comparison with wooden prop.

New, low-cost, fixed pitch, aluminum alloy propellers using extruded central shafted blades and hub shear plates of improving, high-strength performance. The two-blade propeller weighs less than 4 lb. more than the 10-blade standard wood cast as designed for the Ensign. The three-blade shafted prop weighs only 15 lb.

► **Blade, Hub Details-Closed** is nearly constant from root to tip, which, in effect, causes greater activity toward the tip. Fig. 1 shows sections taken up

presumably 6 in. apart, and how the hub and blade root sections fit together.

The leading edge is given a "backbone" for stiffness, milled off toward the tip. Fig. 2 depicts the 10-blade as milled and with the hub and the hub.

The latter is made by merely cutting an extension to length and leaving the smaller hole that helps set define an airfoil.

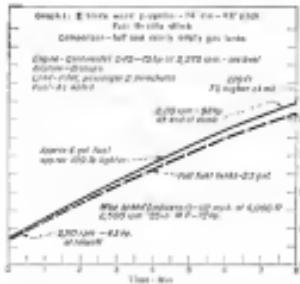
The blade onto the blade extension indicates the portion milled off.

Figs. 3 and 4 show the finished propellers. The three-blade prop was made

from selected extrusions and bonded with its sections the same distance from the centerline as with the two-blade. The tips were then cut back to the required reduced diameter.

► **Test Comparisons** A series of flights were made to compare the performance of the two fixed pitch metal propellers with the standard wood propeller as designed for the Ensign powered by the Continental C-75 engine.

All flights were made under carefully controlled conditions, the same flight pattern always being used. Each flight took approximately 20 min and the net ceiling flight was also about 10 min of ground time, just long enough



to allow for change of propellers. Flights were made in the early morning or just before sun-down, to obtain smooth air. Every run with a metal prop was either preceded or followed by a flight with the wood prop, to obtain direct comparison of performance.

The plane was piloted by F. S. Gabby, and the writer occupied the passenger seat to record data. Passengers were seen and the total weight of the ship never varied by more than that of the amount of gas required for the 20 min. flight.

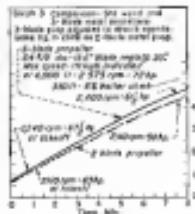
A sensitive altimeter was installed and a standard pressure gauge was added so that barometric could be calculated. Foremost was to make a full propeller climb to 4,000 ft. at slightly higher, using the climb in cruise.

All flights were made from Lockheed Air Terminal, the ground altitude being about 70 ft. at point of takeoff. Thus started the initial wheels off the runway.

Flight 1 was taken at 1,000 ft. above the ground. Full throttle level flight was soon made at 4,000 ft. and trim speeds were at the same altitude as indicated in the data.

► Performance Data—Graph 1 illustrates what happens in climb performance for the wood propeller when the gross weight is varied approximately 100 lb., the difference between full tanks (73 gal.) and nearly empty tanks (about 6 gal.). The climb is increased 7 percent. This test was made to provide a known basis of comparison.

Graph 2 shows that the two-blade metal propeller (wood propeller) provides a 5 percent increase in climb over the standard two-blade wood prop (nearly empty tank). This is an increase that exceeds the difference in performance between full and nearly empty fuel tanks for the engine when equipped with standard wood prop.



100 rpm (one winged) for the propeller.

The 5,000-ft. altitude is a practical one for most cross-country flights and 8 mph (above 112 mph) is considered a practical climbing power for most light planes. If greater power and airspeed is desired, the same gives a lower altitude, still providing an increase in speed, lower power and improved altitude holding time at a higher altitude.

A more rapid type of variable pitch propeller obviously would have difficulty in putting itself on a lightplane such as the Fugitive when compared with the virtually instantaneous performance of this single, low cost, fixed pitch, metal propeller.

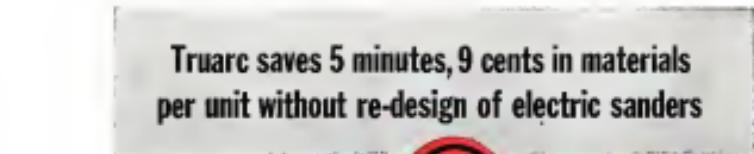
► Blade Angle Change—The two-blade metal prop was reduced in blade angle from 17° to 16° at the 10th min. altitude. This had the following effect, resulting primarily from the increase in propeller RPM that goes with the lower blade angle:

• Climbs increased 14 percent over standard wood propeller. Engine speed at climb was 2,750 rpm. This produced 73 ft. of climb (750 ft.) and 67 hp at 4,000 ft.

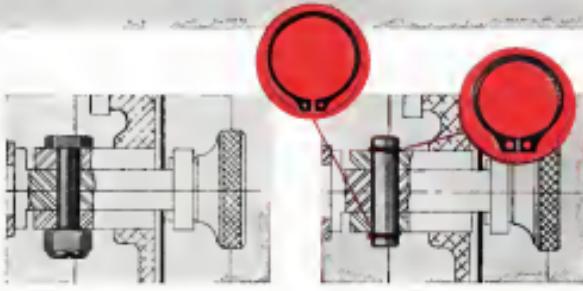
• Top speed increased 5 mph to 138 indicated at 4,000 ft. Horsepower and rpm also increased from 71 hp at 2,900 rpm to 76 at 2,750.

► Performance Factors—Theory—The metal propeller's working sections are approximately half as thick as the comparable wood prop sections and it operates at higher angles (16° to 17°).

The lower section, operating at higher angles, tends to limit speed of the prop, resulting between climb and top speed. Note that the metal propeller has 2,110 rpm in a climb and 2,750 at top speed, a speed of 390 rpm. The metal propeller has 2,750 rpm in a climb and 2,900 at top speed, a speed of 250 rpm.



Truarc saves 5 minutes, 9 cents in materials per unit without re-design of electric sanders



OLD WAY

Special 'N' cap screw and 'N' lock-nut and hub differ from and puzzle assembly on Model A3 "Takes-Apart" Sander, Peters-Cable Machine Company.

Simple 'N' C hub inserted in automatic screw machine, supplied with Waldes Truarc Retaining Rings. Standard crimp (4500101) of top outer hubnut assembly takes up by standard retaining ring (4510020) at bottom. Assembly is never again vibrated, can be easily taken apart and re-tooled many times with same framework.

Every hour through the production lines cuts 9 cents less for materials, reduces 5 minutes less labor—with just the simple change from cap screw and hub to Waldes Truarc rings by Peters-Cable Machine Company, Syracuse, New York. The change to Truarc required no new design, no alterations in tooling, but just the re-aspiration of old methods.

Truarc can help you cut costs and increase produc-

tion, too. Whether you use machined shoulders, notches, steps, snap rings, center pilot-holes or a Truarc ring that does a better job of holding parts together, All Waldes Truarc Retaining Rings are precision engineered, remain always circular to give a zero-falling grip.

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Although this shims is not great enough to prove useful in a plane designed with the high strength factor of the P-51, it is indicative of the substantial load caused in a wing structure by temperature gradients resulting from high speed dives or rapid changes in temperature. Attention is called to the structural dangers of aircraft.

With the inevitable rapid increase in aircraft speed and attendant situations in the supersonic regime, it is clear that temperature gradients will have to be taken into account in future designs if no dangers are to be avoided.

References

Tradeland, Thorval and Schleif, "Bent and A Temperature Gradient in the Wing of a High-Speed Aircraft During Dive from High Altitude," NASA Technical Note No. 1625.

Pesco Research Plant

Westinghouse Corp's Pesco Research plant is building a \$1,250,000 pressure pump and research laboratory. Close liaison between research and production can be developed and maintained.

Paul Fawcett R. J. McHugh outlined that the plan is to concentrate on aircraft armament "designed" by planes designed for supersonic and near transonic speeds.

The assembly plant, located on a 35-acre site near Cleveland, is expected to be completed by next May. Building will house a complete workshop lab, an electrical lab and a research lab for testing aircraft and industrial hydraulic equipment. A separate building will house the test section for the study of aircraft fuel. It will contain an altitude chamber for observing the operation of systems equipped under sub-Arctic conditions and at pressures equivalent to 50,000 ft.

These also will be equipment for testing rocket pumps and jet engine fuel pumps under high pressure.

How Much For a Dollar?

Increased complexity of modern fighting planes makes a big difference in the cost of aircraft procurement. This is not only true while engineers and aircraft contractors who have contributed to the high cost of today's aircraft.

Two billion dollars would have bought eight in 1924 when the services could have gotten out military fighter planes for that amount. The Curtiss P-1 (Navy P-1C) cost the respective services \$12,000 each and it was a whole lot of an airplane at that. On the new procurement would have put a fleet of 100,000 two-engine fighters like the one in the air in 1938.

the "X" in jet propulsion

Of course, there is no letter "X" in the words "jet propulsion", but, in the development of jet engines, a very big and important "X" was the design of a fuel pump for this service. This was as tough a problem as any ever tackled by Pesco engineers, and here are a few of the reasons why . . .

1. The pump must deliver a burst of gasoline in 1 1/8 minutes . . . three times the amount previously required.
2. It must pump that amount at as much as 750 lbs. per square inch pressure . . . 15 times the pressure used by American airplane engines during World War II.
3. It must have nearly the same service life as low pressure pumps. That was

the real sticker . . . since gasoline has no lubricating qualities, the wear of internal parts increased much more rapidly with higher pressures.

Pesco not only developed a high pressure fuel pump that met all requirements but went a step further in producing a pump with two pumping sections . . . one for the main fuel system and the other for the secondary system which goes into operation automatically . . . just in case.

The success of Pesco's solution to the "X" in jet propulsion is attested by the fact that today every American production jet engine uses a Pesco high pressure fuel pump.



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Yes, this alertly managed field of the Reading Aviation Service, Inc. sets a high standard for service and performance. It's a well laid out, perfectly conditioned field. It's completely equipped with the latest maintenance and repair facilities. And it has all the conveniences of its Class A rating plus an insurance loading system.

Regardless of the size of your plane you'll find everything you need here in the way of top-notch maintenance and repair service.

And, of course, Reading Aviation Service, Inc. provides top quality Cities Service petroleum products and services.

Cities Service Aviation Gasoline
Cities Service Kerosene and Cities Service Aero Motor Oil
Cities Service Gaso Solvent engine cleaner
Cities Service Trojen Aero Greases and various specialty
lubricants



AVIATION WEEK, October 18, 1968

Pilot Seat Affords Quick, 15G Ejection

Construction of Air Force ejection seat pilot ejection seats has produced a new design capable of developing 15G separation at only 4 sec. And the test results are very encouraging, which solves one of the major problem areas in the pilot seat design.

Atro Medical Electronics, Air Medical Corporation, began ejection seat experiments shortly after V.E. Day when German development data became available. Experiments were conducted with a 100 ft. ejection tower containing a pair of rats, up which the seat was accelerated.

Although success was had for these early tests, human beings have been ejected on subsequent occasions, both on the ground and in the air. With pilot seat accelerated, the new seat withstands 200 ft. of air pressure at a speed of about 60 ft. per sec. before impact with a 25 in. stroke.

Experiments in ejection seat technology have revealed that a pilot can stand an acceleration of 15G safely provided it is separated only briefly. If he remains in acceleration he must be limited to about 10-12Gs of force or he will be killed.

Fuel System Castings Resin Vapor-Sealed

Elimination of porosity in fuel system castings has been successfully demonstrated at the Air Materiel Command's aircraft laboratory plastic shop.

The method, developed by the auto casting industry, was applied to a single point aircraft fueling system.

Formation of compensate permeated fuel vapor to stop through cracks, pores and valve seats, fittings, etc. to create a fine mist. AMCC solved the problem by sealing the casting with a polyester resin vapor at an ambient temperature which hardened at 240° F.

Openings of the casting are blocked, and heat is applied to drive out water vapor. Heat is applied to the exterior and the interior within the casting until the warm fluid into the pores. When the resin hardens, the casting is effectively sealed against vaporage.

"Leakproof" Tube

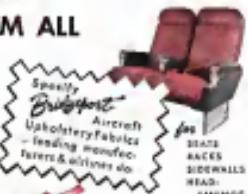
Low maintenance and increased safety is claimed for new tube made by Firestone Tire Rubber Co., Akron, Ohio, for military and commercial aircraft. Stated to be held air ten times longer than ordinary tubes, product undergoes special cleaning on inside surface to eliminate the normal leakage of air through wall.

WHICH DO YOU WANT?

Grand good looks
Cool and comfortable
Attactive colors
Installed 20% faster
Longer lived
Soil resistant

YOU GET THEM ALL

WITH BRIDGEPORT UPHOLSTERY FABRICS



Bridgeport FABRICS, INC.
BRIDGEPORT, CONNECTICUT
Est. 1837

AVIATION WEEK, October 18, 1968

ENGINEERING

**HS-100 ASSEMBLY**

Contains one HS-100 14 in. sub-assembly
For vibration control applications
SIZES: 14 in. HS-100
WEIGHT: 14 lb. HS-100
MATERIAL: 100% 303
Steel, Weight 8-1000 lbs
and 12000 lbs.

**HS-20 ASSEMBLY**

Contains one HS-20 14 in. sub-assembly
For vibration control applications
SIZES: 14 in. HS-20
WEIGHT: 14 lb. HS-20
MATERIAL: 100% 303
Steel, Weight 8-1000 lbs
and 12000 lbs.

HS-30 and HS-340 ASSEMBLIES

Contains one HS-30 34 in. sub-assembly
For vibration control applications
SIZES: 34 in. HS-30
WEIGHT: 34 lb. HS-30
MATERIAL: 100% 303
Steel, Weight 8-1000 lbs
and 12000 lbs.

DUPLICATE ORIGINAL PERFORMANCE REPLACE WITH LORD DYNAFOCALS

Follow the lead of companies like Lockheed, Martin and Douglas who use Lord Dynafocals to original equipment... you'll get better vibration isolation, longer service life and lighter weight.

Check these features:

- Smooth flight**—flexible center-of-gravity suspension insures maximum vibration isolation.
- Low weight**—careful design and stress analysis insures minimum weight.
- Maximum safety**—all steel parts are 100% Magna-Tested. Metal parts interlock for positive safety.
- Low engine movement**—rubber isolators limit low axial engine movement, prevent metal-to-metal bottoming.
- Easy installation**—metal parts are interchangeable due to precision construction methods.

Write for a copy of Lord Service Bulletin containing valuable information on maintenance problems, suggestions for increased service life, and parts list. Mention engine or mounting in which you are interested.

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**HS-34 ASSEMBLY**

Contains one HS-34 34 in. sub-assembly
For DYNAFOCAL HS-340
Using Avco & Vultee 34-3200
Series 3400

**HS-100 ASSEMBLY**

Contains one HS-100 34 in.
sub-assembly
For DYNAFOCAL HS-340
Using Avco & Vultee 34-3200
Series 3400
SIZES: 34 in.
WEIGHT: 34 lb.
MATERIAL: 100%
Steel, Weight 8-1000
lbs and 12000 lbs.

**LORD ENGINE MOUNTINGS** Ref. HS-8

| Type Mounting | P.A. M. 1020 Series | | Weight HS Series Per Plate |
|---------------|---------------------|--------------------|----------------------------------|
| | Front | Front Per Plate | |
| Front | 10 | 10 lb/pt | 4 |
| Mount | 10 | 10 lb/pt | 4 |
| Center | 10 | 10 lb/pt | 4 |

LORD**Vibration Control Systems****INTERFEROMETER
FAMILY**

Get all-directional protection with one-piece vibration mounts. Just roll on any job. Interferometer family includes: (1) Interferometer Mount, (2) Interferometer Mount, (3) Interferometer Mount, (4) Interferometer Mount, (5) Interferometer Mount, (6) Interferometer Mount, (7) Interferometer Mount, (8) Interferometer Mount, (9) Interferometer Mount, (10) Interferometer Mount, (11) Interferometer Mount, (12) Interferometer Mount.

**COWL MOUNTS**

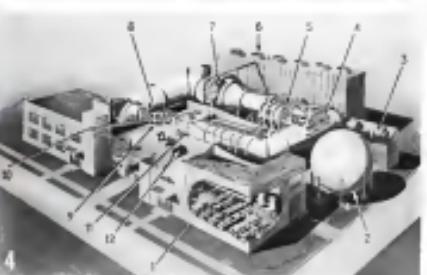
Front cowl system shown, or front and rear cowl system with Lord Take-Off Mounts. Illustrated Use these, too, for propeller jobs—where flexible joints are required.

**RAILROAD, AIRPORT
COMMUNICATION EQUIPMENT**

Specify Lord Multiplane Mounts for installation of vibration-free all-directional fixed floor form mounts (shown above) and available for replacement.



New Supersonic Tunnel Largest Operating



Markedly cutting the research potential of the National Advisory Committee for Aeronautics in the latest major addition to its Ames Aeronautical Laboratory—the largest supersonic tunnel now operating, capable of speeds up to Mach 1.6. A larger [60 ft. dia., Mach 2] tunnel at the Cleveland Lab is not yet in operation.

1. **Arrow** points to 60-ft. test section. Model is supported on sting mount (bottom three pages), shielding close flow by eliminating excessive turbulence caused by old strut-support method. Thousands of struts now have been dropped off. Glass in sides is for ultimate viewing safety.

2. Testing vessel, at large section of test section where boundary condition exists, serves to direct air flow around corner.

3. Control panel console is so designed that round can be operated by three men. The equipment provides regulation of speed of flow and density, and records results of tests.

4. Cutaway aspect of tunnel installation. (1) Diverge pipe to way prevent very high Reynolds numbers can be obtained; (2) airways accumulate for varying pressure in tunnel; (3) two 15,000-hp. centrifugal drives; (4) testing vessel; (5) variable compressor to provide tunnel airflow; (6) reduced tunnel in which air is accelerated before being introduced to tunnel; (7) heat exchanger; (8) contraction section, at which airflows flow between opposite; (9) adjustable throat containing variable area to provide flow through nozzle block which changes diameter at the point to produce flow of desired Mach number; (10) reduction plate upstream; (11) 60-ft. test section; and (12) control console.

NEW AVIATION PRODUCTS

Plastic Spray

For waterproofing aircraft wire, cable, battery cables, magnesium, etc., and protecting metallic surfaces subject to corrosion, transparent plastic coating, Kynar, is supplied in hand compact dispenser to give fine spray or mist, allowing plastic to be applied to aircraft wire, aircraft cables, magnesium, etc. Material, made by Duco of Kester Co., Inc., Phila., Pa., dries in less than a minute, leaving clear, smooth, flexible finish that resists high temperature deformation, water, alcohol, acids, salts, acids, gases, and fumes.



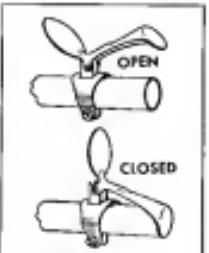
Air Comfort for Baby

To make air travel with infant more comfortable, combination safety chair, bassinet, mib and tutu, "Air Niche," weighing less than 1 lb., is offered by International Luggage Corp., 750 10th Ave., New York City. Safety harness on car seat enable fastening to stroller, and wide band can be strapped across baby's chest. Device inflates quickly, is simple and waterproof, and can be carried in small bag when deflated.



Handy Thickness Gage

No bigger than a small pocket watch, dual indicator gage provides easy means of measuring and comparing thicknesses of rubber, sheet metal, plastic, wire, etc. Made by L. S. Starrett Co., Athol, Mass., small hand events revolutionizing up to maximum range of 4 in., on dual gagehead or .001 in. Spindle is used for clicking游标 scale at top of gage. Power is supplied by the two-chambered case and standard dual compound gears, device driven by hand equivalents on its back. Crystal is sun-blasted.



For Battery Upkeep

Designed for regular maintenance checks and portable aircraft emergency power needs by Bogen Battery and Spark Plug Co., Reading, Pa., handles single 12-volt aircraft battery at starting rate of 4 amp. Should permit manual reduction of charging rate to 2 amp for floating charge. Unit operates on 115 v. a.c., has full-wave selenium rectification. Weight is 9 lb.

Offset Ratchet Screwdriver

Made by Am-Tech Co., 4920 Alvarado Boulevard, Los Angeles 3, Calif., screwdriver is designed to permit application of leverage and switch gear access to accessible to remote driven. Ratchet permits use in confined spaces and its rotating lever makes tool suitable for driving or removing screws. Head has two blades, for large and small screws. Overall length is 14 in. Standard driver is made for sheet metal only, but is available with special drivers for Read & Poole, Phillips, and other screws for aircraft applications.

Protects Pitot Tube

To eliminate need for such an expensive pitot tube, protective developed by Strong's Flight Service, Forreston, Tex., opens automatically at 30 mph and remains open until speed falls below that value. CAA approved, device weighs 1 lb., is made of heavy nickel-plated brass and is available for tubes from 3/8 to 1 in. to 4 in. o.d.

Permanent Line-Labeled

New device for aircraft tailoring identifies fabrics developed by Glenn S. Martin research engineers. It is designed to be more efficient than use of tape. Made of cellulose acetate lacquer (3.2) in thick and 1 in. wide, extruded, cold end, plastic material has printed in fastener below surface and cannot be removed easily. For application, clamps are applied over fabric, overlapping edges are sealed with acetate applied with hypodermic needle, and held in a clamp with the adhesive heat set (low intensity). Printed identification is not obliterated by contact with hydraulic fluid, high pressure gasoline, water, or aircraft fuel. Material is abrasion resistant in operational stresses. Product is made under license by Toplight Tool Co., Inc., New York, Penn.



Ready to Rise and Fly

The day of the turbo-prop is here

—a day which aerospace research has been anticipating for many years. Aeroprop Doubts are over, the logical answer to turbine installation of great horsepower. They are ready with greater power absorption in practical dimensions—with minimum weight for large installations—with balanced gyroscopic and torque effects.

Aeroprop Doubts have already made their name, using the proven principles that have distinguished all Aeroprop products. Functionally, the use is unchanged, using the same self-contained hydraulic system, the same hollow hub, the same regulator and governor—all features of solid value in dual combustion. The Aeroprop Electronic Control provides the

precise speed control so necessary for turbo-prop combinations—with the solid safety frame that the integral hydraulic controls continue to function in event of electric power failure.

Aeroprop built the first production Doubt, which proved themselves in many applications. Today's Doubts—refined, proved and improved through years of research—prove again that tomorrow's aerospace problems can be met today of Aeroprop products.

The Aeroprop is available in single or dual versions with lesser hydraulic, on nose pitch, steering, drooping, and other features required by your application. Regulate, hub and blade assemblies are designed for safe installation or replacement in a strong, light and simple

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THE LEADING MANUFACTURER FOR AIRCRAFT TURBINE
REGULATORS, PITCHERS, DROOPERS TO MOST MODERN AIRCRAFT

.....When you're glad you have
a **Snap-on**



**Tightening landing gear bolts
with | Snap-on Blue-Point
BOX SOCKETS**

Landing—taking off—towing off...that's when the landing gear must function perfectly, especially in this mechanical age the landing gear bolts and nuts. To make sure they are tightened to correct manufacturer instructions, aviation mechanics like the one Snap-on Blue-Point Boxsocket. They like the way the self-tightening grip distributes the pulling tension equally around the wrench head providing "self-tightening" factors of safety.

Another feature, contributing to good maintenance workmanship, is the sound confidence, full grip hand grip off the handle to provide adequate knuckle insurance as well as for working over obstructions.

Snap-on offers 12 different styles of Boxscrews with sizes ranging from 3/16" to 4 1/2" for a wide variety of use. Snap-on tools are available through a nationwide, direct-to-you tool service.

Snap-on Tools
TOP CHOICE OF PROFESSIONAL MECHANICS

Photo, Courtesy, Blue-Point Division

SNAP-ON TOOLS CORPORATION

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International Division, Kenosha, Wisconsin, U. S. A.

AVIATION WEEK, October 26, 1968

SALES & SERVICE

CAA Shifts Affect Private Flying

Shakeup has adverse effect on promotional activities after personal aviation boom fails to materialize.

Present aviation law considerably grinds low in the recent reorganization.

A reorganization of what happened is the result of the split between the CAA and the Federal Aviation Administration.

• **H. Lloyd Childs**, assistant to the administrator for personal flying, has been removed from his spot of direct service to the head man of CAA to a remote location in the new office of aviation development.

• **Dr. Dean Shandt**, assistant to the administrator for research, who has directed numerous physiological research projects for aviators and been a voice in favor of the introduction of the still-waiting medicals, has apparently been separated from his position.

• **Annitors** to the regional administrators for personal flying have been abolished and the individuals who held these jobs have been transferred or separated.

• The Nonresident Flying Advisory Committee in the administration, will no longer report directly to the administrator, but will now function as an advisory committee.

• Separation of Dr. Broadbent is perhaps the most dramatic loss to personal aviation in the reorganization. Dr. Broadbent's scientific approach to CAA's nonresident computations brought about a new

opportunity for pilots who might never have passed the old physical. He and John Green, another old-time CAA personal flying friend, whose name has not appeared in connection with the reorganization, were most effective in advancing liberalization of medical examinations for private pilots between 1950 and 1955.

• **Committee** = Nonresident Flying Committee has been an active voice for personal aviation since it came into being back in 1951 and by T. F. Wright, its present chairman, its influence will continue in as great a role as the committee's standing board for the future.

The lightplane market and the fixed-base operator, as well as the aircraft maintenance industry, are the ones that will be most affected by the changes.

Motivation behind the series of actions may be traced to fiscal theory.

The fiscal situation of the present administration, however, seems to CAA's offer to seek funds to encourage the personal aircraft design development exclusively as a contributing factor.

Put this down of government-supported development activities was obvious in isolation to Administrator Richard. CAA's efforts to promote personal aviation in this way was not welcomed, it is said by the nonresidents.

• Presently, the Army—DOD of personal aircraft sales is approximately 70 percent. This year, it is anticipated, sales to the CAA that the personal aircraft potential in the nonresident future was far less than the day predictions at the end of World War II anticipated. It followed that assumption of CAA's promotion to promote this branch of aviation can cut back to fit the revised potential.

New emphasis on coordinating civil and military aviation, and increased emphasis on larger imports for national

51,102 Mechanics

A recent Civil Aviation statistics tabulation shows 51,102 certified mechanics and 25,365 certified flight instructors in the country.

California leads with 12,644 mechanics and 5,911 flight instructors. New York comes next with 7,961 mechanics, Pennsylvania is third with 1933 mechanics. Texas has the second highest number of flight instructors with 2,617.

Verizon and Nevada have the fewest mechanics, with 74 and 73 respectively.

Tabulation reflects conditions as of April 1, 1968.

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PORTABLE ENGINE

Liftoff of the newest powerplant used in the Mooney M-18 one-place plane is officially certified by CAA in this picture of Lewis M. Credley, executive vice-president of Credley Motors, holding the 39-8 Credley Cader powerplant. Credley is now making modifications at Cessna's to convert the engine, used in powerplants for the single Cader into, into the aircraft powerplant for the M-18.

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Here are the five basic designs of Jack & Heintz aircraft products for power generation and conversion...each proven by years of service...engineered and custom-built to meet your requirements.

Lower your costs with
JACK & HEINTZ
Dependable
Aircraft Products

Write for the new catalog giving complete information on this J & H family of aviation cost-cutters.



Utility Emphasized In Student's Design

Practical concepts passed in college aviation classes are highlighted by the winning aircraft design submitted by Raymond R. Dault, a senior in the aircraft engineering department at the University of Detroit among 150 contestants engineering students. Sponsor of the contest was Continental Motors Corp.

Intended to meet basic needs of private aviation, the design, the "Adua," stresses these considerations: • Utility in passenger and baggage capacity, cruising speed and range. • Safety in flight characteristics, visibility, and against hazards. • Moderate initial cost and low operating expense.

It is for a low-wing, all-metal craft using a Continental E-165 engine.

With an estimated gross weight of 2600 lb., including four 175 lb. passengers, 110 lb. of luggage, and 40 gal. of fuel, a cruising speed of 150 mph and range of over 1000 mi. are anticipated.

► **Concept Design**—Main fuselage section measures 44 in. wide and 50 in. high at pilot's position. By folding and sliding sections, canopy could be opened from either side or released as part of emergency.

Aft fuselage is attached to main section by four points. Propeller is held in position by a case.

Also featured are controllable pitch prop, hydraulic brakes, and exhaust capsule heating system.

For cost considerations, the design anticipates mass production and minimum storage for two or three years.

Wilson Resigns AOPA

Edgar E. Wilson, Jr., has resigned as assistant general manager of Aircraft Owners & Pilots Association. He has not announced his future plans and his successor has not been named.

BRIEFING FOR DEALERS & DISTRIBUTORS

AIR TOURIST MECCA—State planes to make Wisconsin an air tourist mecca by building approximately 65 to 70 small strips alongside lakes in the Wisconsin back country are being pushed by Lee Macland, state senator from Menomonie.

Recognizing that Wisconsin's second largest industry now is tourism, Macland is asking the state legislature to provide funds for the strip construction. Some of the strips will be constructed on abandoned roadways, sections of which can be easily reclaimed to provide lightplane runways.

Macland said that he contemplated radio bulletins for private flyers from the Macland, indicating where the strips are located and when they start. Flying southerners from northern Wisconsin and other nearby metropolitan centers like Chicago will be able to drop in a line on the Wisconsin lakes within a few hours after leaving home. It is believed visitors in the lake country will be feasible where the strips are placed.

LITTLE ADVANCE—As part of the NASA Research and Development Committee at the recent meeting of the state aviation officials concluded that little basic advance has been made in aerodynamics of civil flying in the past year, although there have been some encouraging publications in details such as the maximum landing gear sponsored by CAA, reduction of external noise in small aircraft accomplished by Aerostatic Research Foundation for NASA and structural changes to reduce wing load of aircraft, largely brought about by the much larger research project of Cornell Medical College.

Research committee obtained applies from 22 air carriers, 15 aircraft manufacturers, three engine manufacturers and four propeller companies on a questionnaire about external aircraft noise, what research is being done to reduce it, what actions should take. MacLean as chairman reported that difficulties, expense, added weight and low efficiency resulting from instrument reducing external aircraft noise were a serious hindrance.

State support for the approach of low noise aircraft is desired, recognition facilities to maximize aerospace traffic patterns, and outlining of "co-bay" pilots with low-flying noisy war surplus aircraft were advocated.

GI CUT BEEF—W. VA.—Herber Stark, West Virginia transportation director says, the thinning of the GI flight training program in his state has caused the folding of several good local line operations. In the hills of West Virginia, he points out, it costs a considerable sum of money, probably \$10,000 to \$40,000, to level out sufficient land and build even a small airport.

With the operations which folded was for the most part new enterprises started within the last few years, they did not fall in the class of overnight operations which the VA Washington officials like to generalize about. Stark says his operations were responsible men who invested and built their own airports as a result of the voluntary action of the Washington and regional VA officials.

UMT VS. FLIGHT TRAINING—A trusted source of veterans' affairs in Washington says the support for the government flight training flight testing for civilian courses from the backlog of the canceled military training programs, who are working through the top VA officials. The UMT supporters realize, he says, that every GI who leaves to be trained over the superiority of exposure to UMT, and that the program that is building up opposition to UMT.

UMT supporters have urged President Truman to step the "hesitated" flight education program which would make America's veterans aware that there is another easier way besides flight, pledging to win was President Truman, who is still a basic military man at heart has listened to their pleas and passed the word to VA.

There were reports in Washington last week that Gen. Carl Spaatz, who probably will tell the line against along the VA stand on flight training, was considering resigning as VA administrator.

—ALEXANDER MCKEELEY

FINANCIAL

Airline Ailments Probed for Cure

SAE speaker critical of route duplications; calls for greater individual initiative on part of operators.

Separate actions of the airlines have attracted public attention to the individual problems they create. Recently an attempt made to regulate some have failed or been postponed. In this a prominent spokesman for the industry is the one where they fit in the categories that make a successful and sound air transport industry.

It is all too natural to want to examine the attempts to go to the root of the industry's difficulties and point up the field for corrective action. It is not necessary to agree with such views. It is enough to focus attention on fundamental issues in a broad discussion leading to necessary corrective measures.

► **Contributions**—In this light, an important contribution was made by W. L. McMillen, director of government planning for American Airlines, in his recent talk before the Society of Automotive Engineers in Los Angeles. McMillen discussed "Some Economic Problems of the Air Transport Industry."

The concept of competition is given a searching analysis. McMillen holds that the public utility concept in a regulated industry, provides for a combination or franchise. In accepting this definition, as an average general rule, he believes that at first thought to do eliminate rivalry between individuals, groups, sections of the country, etc. (b) the right to change price conveniently and suddenly from day to day; (c) the right to operate where, when, and as it pleases; and (d) the right to withdraw quickly those services it finds unsatisfactory.

► **Principle**—McMillen continued with the premise that in accepting a certificate, a high price is paid, for the privileges given up are very important in attaining profits. In terms of the industry, freedom from certain competitive pressures, in most cities, freedom from all competition are expected. The conclusion is advanced that the airlines have paid the price but have not received the benefits they should have in return for the sacrifice of those rights.

"An amazing amount of competition has been permitted and encouraged," the speaker further declared, "with on

necessary to eliminate excessive route mileage. The general tendency is for each carrier to suggest that the next has given something up while its present route structure remains intact.

The obvious of mistakes that plagued the industry's proposed amendment of the air route control legislation. Not only is it only a small sample of the difficulties encountered in attempting to eliminate certain routes. Only a Sull's rendering of the route awards, mentioned by Congress, appears to have much chance of bringing order to the chaotic route situation of the airlines. And this route system is unlikely.

► **Competition**—The McMillen paper also took exception to the competition afforded by non-certified carriers in both passenger and freight categories. The airline industry is in the "old" objective of the Civil Aeronautics Act—of a network of airlines, not just a cross-linking operation between a few large cities. Other airports of the industry such as the airfield regions created by constantly increasing rapidly small operators also are noted.

► **Tone**—There is a positive constructive tone in the conclusions and recommendations advanced in McMillen's 13 point program. (Aviation Week, Oct. 13).

The reported features resolve around the question: how far is it much that the airlines themselves can go to improve their own lot?

In this connection, it is interesting to note that American's costs have been gradually declining in the face of a general inflationary episode. For example, American's costs per available ton mile flown for the twelve months ended July 1, 1946, were 15.7 cents; for twelve months ending July 1, 1948, they were 9.9 cents and they were less than 25 cents in July, 1949. This was accomplished in the face of a 30 percent increase in the cost of all commodities during the same period.

► **Cooperative**—In the forecast of McMillen's package of 13 suggestions, which are performed as a cooperative in order to be effective, we immediately think primarily with the initiative of the carriers themselves. This includes further economies by new methods and simplification of present ones. More aggressive and imaginative selling is also suggested along with better public acceptance and regularity. The methods are called on to induce the CAB to use more promptness from and rules for handling rate and route matters.

It is encouraging to learn our program concerning the future of the airlines which places so much importance on individual initiative in the industry rather than on the seemingly easy way out of along for more hand-outs from the government.

—Sieg Albrecht

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"OVER THE PAST 18 years we've flown a lot of planes, many places. But when it comes to high quality and dependability in aviation fuels and lubricants, we stick to one brand — that's Esso."

Mr. Chester G. Coffie
Dexter D. Corbin, (at right) Fred A. Trean
C. H. Dexter & Sons, Inc., Number One, Costa



"32 YEARS' EXPERIENCE in the aviation business has taught me that the name Esso stands for the kind of quality and dependability in aviation fuels and lubricants I want for my customers and for myself."

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Exide[®] Receives Modern Plastics Award

In the recent Modern Plastics' seventh annual competition, The Electric Storage Battery Company received the "Innovation and Machinery Award" in recognition of Exide's pioneering in the use of a plastic container for jet plane batteries. This

container, especially designed by Exide engineers for use in jet planes, is just one of many notable contributions to the design and manufacture of aviation batteries, ensuring all storage battery needs—with dependability, safety, long life and economy.



Write for a copy of *Exide Aircraft Battery Catalog*, which includes the Exide Battery price and replacement data sheet.

1888...Dependable Batteries for 60 Years...1948

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

AVIATION WEEK, October 18, 1948

AIR TRANSPORT

CAB Insists on Flight Engineers

Board upholds previous order that third crewman be carried after Dec. 1; affects 109 DC-6s.

Acting over the strong protests of the Air Transport Association, the Civil Aeronautics Board has confirmed an order which requires an additional third crewman on flight engineers to be carried in the cockpit of more than 100 DC-6s before the end of the year.

Wriggling the prospect of added safety against the possible result of a collision, the Board declared it is in the public interest to stick by its opinion of last spring with only a few modifications. That ruling (Aviation Week, April 26) provided that after Dec. 1 no man holding a flight engineer certificate shall be permitted solo as a flight engineer on flights certificated for a maximum weight of 10,000 lbs. or less, or on aircraft with maximum takeoff weight, and on all other aircraft certificated for more than 30,000 lbs. maximum takeoff weight when the Air Transport Association finds that the design of the aircraft used in the type of operation is such as to require engine personnel.¹

► **Change Made.**—The new order differs from the original ruling in that it applies only to four-engine aircraft. Also eliminated was the stipulation that the third crewman be "employed solely as flight engineer." Thus the flight engineer, when required, cannot be assigned simultaneously to other duties for which an airman's certificate is necessary. But a crewman who also holds a pilot's certificate may fly solo as a flight engineer if he can prove to the flight engineer's board he holds appropriate certificates.

While the DC-6 is the only aircraft immediately affected by CAB's flight engineer rule, the order also applies to the Constellation and the Boeing Stratocruiser. But all Comair already carry flight engineers and are equipped with complete flight engineer stations. The Stratocruiser, which will go into service early next year, will also be equipped for this function in the cockpit when delivered, although Northwest Airlines originally planned to use the twin-engine aircraft as a cargo plane. However, the Stratocruiser is basically a passenger plane, but American Overseas Airlines, United Air Lines and Pan American Airways have already tendered to use a third-man crew with the ship.

► **Reasons.**—For Action.—CAB's latest

order declares that despite the additional devices which are available on such craft as the DC-6, "the increased risk of collision which is now in existence calls for the pilot's attention, and is so complex in nature that the pilot's ability to accomplish all his duties may be exercised if provision is not made for a flight engineer."

► The flight engineer will contribute substantially to reduction of pilot fatigue and resultant accident-prone segments," the Board continued. "In particular, the flight engineer can reduce the probability of inadvertent mistakes which would be especially dangerous if required to be performed when the pilot is being flown as a crewman, when there are no other exceptional policies, when radio communications are erratic, or when the pilots are attempting to follow complicated traffic control procedures and

to accomplish instrument approaches." ► **Added Safety.**—The flight engineer is able to perform important duties and add to safety of flight even when riding in the jump seat of a plane in which no flight engineer station has been provided. In addition, the flight engineer adds a specialized engineering function which is useful in the event of fire, smoke and other emergencies. He is also instrumental in overcoming the difficulty and reducing manual functioning, and in reducing the pains of various mechanical duties, particularly those which require one of these to leave his pilot's station. The flight engineer also will contribute to the level of safety by assuming responsibility for proper completion of ground maintenance for the correction of any malfunctions which have been discovered in flight.

American Airlines, which operates the most DC-6s (55), viewed the strongest opposition to the flight engineer ruling (Aviation Week, July 25). AA insisted flatly that adoption of a flight engineer into a standard cockpit did not signified a concession but would contribute to safety.

The carrier emphasized that no DC-6 has ever been turned to the absence of a flight engineer or in an emergency work load on the pilot. It asked CAB and CAA to make a thorough study of the problem before finalizing the flight engineer requirement. The Air Line Pilots Association has been in close liaison with the CAA on the flight engineer regulation and supported American's proposal.

► **Other DC-6 Fleets.**—Next to American, United's 79-plane DC-6 fleet is the largest. Other carriers using the design are British, 6; Panagra, 5; and National, 4. Delta Air Lines began to have its first DC-6s in service by the end of the year.

To date, United is the only DC-6 operator to assume an open line carrying out the flight engineer rule. American, TWA, Pan American and Panagra are in the process of introducing the rule. Continental and Pan American are currently in training at Chicago, Ill.

To qualify as a U.M. "second officer," the crewmen are required to have at least 300 hr. of pilot time along with a commercial certificate and instrument rating, a flight engineer's certificate and an aircraft radio operator's license. The American Flight Engineers Association (AFA) recently presented United's vice president of flight engineers with a Washington preview of the motion picture "Air Power is Power Power," which traces the development of aviation from the Wright brothers to rockets. John E. Alton (right) western supervisor of Commerce for aeronautics, was among those granted by Kiplandson, who has a lesser role in the full-color film.

► **Expense Problem.**—There is some possibility that at least one carrier will not be able to turn its third crewman in time to comply with CAB's Dec. 1 deadline. In this event, an extension will be requested.

Expense of training and using flight



WASHINGTON PREVIEW

Capt. E. V. Kiplandson, president and general manager of Western Air Lines, was last to more than 700 people who attended a Washington preview of the motion picture "Air Power is Power Power," which traces the development of aviation from the Wright brothers to rockets. John E. Alton (right) western supervisor of Commerce for aeronautics, was among those granted by Kiplandson, who has a lesser role in the full-color film.

TRANSPORT

HERE'S WHY THERE'S PROFIT FOR YOU IN A RYAN NAVION DEALERSHIP



A QUALITY PRODUCT. The 4-place, all-metal Ryan Navion is the ideal personal and business plane—a unique balance of safety, speed, aggression and comfort. Millions of dollars in engineering and tooling have been invested in bring the Navion to maximum performance.

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A GENEROUS FRANCHISE. You'll find on a manufacturer who understands the problems of our dealers. That's why we have a sound, workable franchise open to operators and businessmen who can sell planes and serve customers to complete satisfaction. If you are not now representing a 4-place airplane in this rapidly growing market, write or wire us immediately for full details about excellent territories still open.

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engineering, cost of modifying the cockpit of the planes affected and the price which buyers less have figured incorporated in the airline's quotation to the flight equipment requirement. Flight engineers' pay averages around \$100 monthly. American, United, Pan Am, National, Delta and Panair probably will require around 327 engineers in their 100 DC-3s. Results additional to those of about \$1,000,000 monthly.

CAB officials and the Air Line Pilots Association claim that additional safety will more than compensate for the extra expense. The Southwest TWA was seeking cockpit engineers because of the fact that its Constellations had flight engineers. Long TWA's super-powersiders claimed that the purchase of "that extra man as the cockpit" is one of the largest reasons why airline travelers should side Constellations.

CAB Issues Findings On Three Accidents

Mechanical failures were responsible for two accidents and pilot error probably caused a third mishap of which reports were issued recently by the Civil Aeronautics Board.

The crashes, which resulted in only two fatalities:

► **Eagle Air Freight-Crash of a DC-3 on Mt. Hermon.** Near San Jose, Calif., last May, 8 was probably caused by the flight's diversion from its destination and then approach of instrument procedures. The plane had been cleared for a straight-in approach to San Jose (San Jose Municipal Airport), where the ceiling was 700 ft. and the visibility there was 10 miles but the weather was 10 miles. The plane hit the mountain 20 miles eastward of the Modesto 100 range station at an 1800 ft. elevation. There was an evulsion of structural failure or mechanical malfunctioning. The two crewmen, only occupants were killed.

► **Capital Airlines.** The accident which severely damaged a company DC-3 while en route from Eagle Rock, N.M., via Taos to Wichita, Kans., on May 8, 1947, was probably caused by fatigue failure of one of the stabilizing rods at the left engine during flight. The two crewmen, only occupants of the craft were unengaged in the emergency landing in a field near Wichita, Kans.

► **Pan American Airways.** The mishap involving a wheelup landing of a PAA Constellation at Atene (Gold Coast), Africa, last May 24, was probably caused by failure of the nose-wheel assembly, according to investigation board that extension of the nose-wheel gear was restricted by the hydrauliccarrying and landing gear plates did not extend sufficiently to permit engagement of the lock-down device. No one was injured in the landing and the plane was not damaged seriously.

Meanwhile, USF&G now has the airplane for latitudes 15 and 40 DC-3s to bolster the overextended MATS fleet. Some aircraft already have been offered to sell to MATS by the Air Force.

► **National Data.** Up-to-date information on the location of MATS aircraft, aircraft available to MATS, following a reanalysis with MATS officials, the newly organized independent Air Cavalry Association acquired all large regular operators in sensible data on

Airlines to Lend Pilots to Airlift

With MATS strained to limit, Air Force looks increasingly to carriers for manpower and equipment.

The extension of strength provided by U.S. commercial airlines during national emergencies is taking on increasing importance as the Berlin airlift continues to sap the manpower and equipment of the Air Force and of the Military Air Transport Service.

Completion of the first 100 days of "Operation Vittles" only last month found MATS less dependent on the airlines for special trans-Atlantic flights which have furnished badly needed logistical support. But at the same time, the Air Force was looking over the commercial carriers' ability to provide the same type of support for MATS flights in and out of Berlin, which the carriers now do.

► **Pilot Study.** The Air Transport Association last week planned to submit to the Air Force a list of four-engine and twin-engine pilots and captains which the airlines carriers expect to be available during the next few months. Since the Air Force's missing program has in sufficient respect of four-engine pilots, MATS hopes to get from the airlines several hundred pilots flying present who are willing to take active duty during the cold winter traffic season. The crew will be permitted to return to their civilian jobs after March 1 of this year.

USAF will check MATS' list to determine what the pilots have Air Force or National Guard experience and whether they have sufficient training which would be small to date. After this study is completed, the total number of flights will be checked against the needs the Air Force would need.

► **Training Program.** Consequently, the Air Force is in the market for around 250 pilots to be trained in MATS aircraft in order to handle a number of flight equipment. Available volunteers for "Operation Vittles" duty will be trained to handle the new replacement aircraft and aircraft being conducted by MATS at Great Falls, Mont. (Associated Press Oct. 17).

Meanwhile, USF&G now has the airplane for latitudes 15 and 40 DC-3s to bolster the overextended MATS fleet. Some aircraft already have been offered to sell to MATS by the Air Force.

► **National Data.** Up-to-date information on the location of MATS aircraft, aircraft available to MATS, following a reanalysis with MATS officials, the newly organized independent Air Cavalry Association acquired all large regular operators in sensible data on

they proposed facilities, general areas of operation and number and types of equipment. A plan for utilization of the certified aircraft during in emergency already has been submitted to MATS by the Air Transport Association.

MATS' declining need for special commercial contract flights to transport spare parts, engine replacements and other material from the U.S. to Germany is accounted for in part by the trans-Atlantic shunting of "Operation Vittles" C-54s which need 3000 tons in over-the-hump flights. These craft handle a large quantity both in and out of Germany and are available for trans-Atlantic flights back to Frankfurt. In addition several Douglas C-74s (Globemaster) are now available for the trans-Atlantic air route, and these aircraft are handling some transoceanic tonnage down overseas.

► **Flight Flights.** During the first 200 days of the Berlin airlift, between 375 and 380 flight hours were made from Wiesbaden Field, Miss., to Frankfurt by the commercial carriers. These flights of the "MATS auxiliary" were handled by three commercial carriers—Pan American Airways, American Overseas Air Lines and Transoceanic—and their associated operators—Scandinav Air Lines, Western Airlines, and Northwest Airlines.

Alaska Airlines and Transoceanic Air Lines (Associated Press, Sept. 26).

While commercial freight flights for MATS have fallen off, Pan American and ADAIR still work carrying some 4000 military dependents and civilian personnel back from Frankfurt to New York. The two lines also have been transporting about 1600 Air Force personnel to Germany. A continued shortage of passenger vehicles in the North Atlantic is responsible for the air movement.

On the Frankfurt-Berlin air route, American Overseas Airlines flew 4,670,000 lbs. of cargo and mail and 10,000 passengers during the first 300 days of the German carrier's greatest blockade. Only U.S. commercial carriers contributed to Berlin. ADAIR carried 2,800,000 lbs. of cargo and 4,800 passengers and out of the day during September alone.

► **British Round-Globe.** Britain's civil air fleet into Berlin—operated by British European Airways, charter services—has been increased to 10 aircraft, and a new Boeing 747 has been ordered. The original fleet of 14 aircraft has grown to 20 planes provided by 17 different carriers. Since most of these have double capacity to keep a steady and efficient day and night activity.

Another 15 planes already chartered by BEA will bring total Berlin civil aircraft in the Berlin corridor to 41. This figure may be doubled again by the end of October. Through Sept. 25, British commercial aircraft flew 8,500,000 lbs. of food, 1600 tons of mail and 935,100 gal. of gasoline into Berlin.



RENO BOOSTS THE AIRLINES

Today the most intensive outdoor advertising program to promote travel to travel agents is the San Francisco-to-Reno route. The flight has been made by Pan Am since 1946, but the route has been boosted by the Pan Am, New Orleans, Chicago and Cincinnati. Since 76 flight legs a week are being handled by the four carriers, the route is the second most popular in the West after the San Francisco-to-Honolulu route. The legs are designed primarily to encourage short weekend trips to "the biggest little city in the world" by people who do not have time to drive or travel by rail or bus. Located

in the San Francisco, Los Angeles, Sacramento and Las Vegas areas, the signs show the flight time to measure the time from the start point. The Reno publicity campaign is concentrated at a time when the summer tourists are most likely to be advertising visitors. Eastern Air Lines, for example, plans to increase its advertising budget more than 25 percent in the next seven months, compared to the same period last year.

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AVIATION WEEK, October 18, 1948

CAB Policy Protected By Airfreight Group

A revitalized Air Freight Forwarders Association (AFRA) issued findings this week, stating by the certificated airways in cargo operations "must be used exclusively by paid pay to the most extent that passenger operations must be undertaken."

The Board's policy, which is also causing concern in the Post Office Department, was issued for the first time in the recent Board of Appeals and Delta Air Lines mail route opinion (Aviation Week, Sept. 27). At the same time, CAB said that the decision seemed to firmly establish the right of an air carrier to discontinue its air freight operations if the use of passenger aircraft in excess of reasonable compensation will not be enough to meet mail route purposes.

► For AFRA—AFRA told CAB that in the past the certificated airways have generally opposed reiteration of airfreight forwarders and have adopted rules designed to make it impossible for forwarders to operate. "The record in the airfreight era can illustrate the stability and soundness of the certificated carriers to support sound freight rates, as shown by allowing the volume highly necessary to mitigate marginal tariffs and to all reasons of the freight forwarders," AFRA declared.

"This reluctance to accept the needs of cargo rate making has not been true of the noncertified cargo carriers. Yet in the event that freight losses are to be underwritten by paid cargo air freight operations by carriers other than those forward will also prove to be economically impossible."

The certificated carriers have created Air Cargo, Inc., for the express purpose of protecting its interests in the operation of cargo airways by non-cash carriers. That scheduling cargo lines represents a sense the subscription of the certificated carriers' own freight forwarders, placing that forwarder in the strongest competitive position."

► **Experiment**—In response—AFRA and continuance of such a practice will modify the stability of the airfreight forward experiment. CAB has recently issued an exemption permitting the forwarder to function for a period not to exceed the year (Aviation Week, Sept. 20). The Board authorized letters of registration for 99 of the indexed carriers.

Recent data supplied by the certificated airways to CAB as inadequate to determine whether their cargo rates and services are proper, according to AFRA. It added that there is doubt whether the scheduled airways' qual-

ities warrants give them authority to handle freight.

El Salvador Government Speaks for TACA

The government of El Salvador has made strong representations to the U. S. State Department, stating that recognition of rights to be granted TACA, S. A., to continue to operate between the U. S. and Central America.

TACA's cargo flying from San Salvador to New Orleans and CAB's cargo line routes urged the Board not to renew the franchise because Waterman Steamship Corp. has ac-

quired control of the air carrier (Aviation Week, July 5). Pan American Airways is fighting renewal of TACA's franchise to carrier status, charging that Waterman is attempting to get by subterfuge routes it could not obtain from CAB by direct application.

The Salvadoran government asserts that TACA, S. A., is essentially a Salvadorean airline even though its parent company is a Panamanian firm controlled by Waterman. El Salvador now authorizes Pan American Airways to renew the franchise for the present year and that if CAB refuses to renew TACA's present PAA will have an exclusive monopoly on its service to the U. S.



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AVIATION WEEK, October 18, 1948

TRANSPORT

49

IF IT'S Westinghouse

PHANTOMS SCORE IN MAJOR SEA TEST

Again, Westinghouse Yankee Turbojets Prove Their Dependability

To prove the operability of jet aircraft with the fleet under tactical conditions, the Navy put sixteen McDonnell Phantoms through their paces off the carrier USS Saipan. Sixteen Phantoms catapulted off the carrier deck, dive-attacked the targets, maneuvered in formation, and landed on a rolling, pitching deck. Sixteen Phantoms did everything that could

be asked of carrier fighters . . . and did it flawlessly.

One reason for the success of the test was the faultless per-

formance of the Yankee (J-30WE) Turbojets—power plants of the Phantoms. Engine starts were unfailing. Performance was excellent—with no engine trouble throughout the four-day test. What's more, the ship's crew liked the jets—liked their much lower noise level . . . the accessibility of the engines—the convenience of handling.

Thus, in the first full-scale, tactical jet operation, the Navy gave an enthusiastic "Thumbs Up". Again, the Yankee Turbojet engines have proved their practicability in operation with the fleet. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

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